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676 Hill St. Tracy, Cal.

1912

Malva

and

How to Grow it.

Published by
**THE WING
SEED CO.**

MECHANICSBURG, OHIO

Guarantee

While our seeds are selected with the greatest care we do not guarantee them except where it is definitely stated. However, we are perfectly willing that our customers should send our samples for analysis either to the Department of Agriculture at Washington or to your state experiment station, and we will also be glad to have them tested for germination.

Prices

Prices of many of the grass seeds fluctuate so much in market that we have decided, instead of putting our prices in the catalogue at a high enough level so that we could be sure to maintain it throughout the season, to use the Price List, which is independent of the catalogue, and this will be found enclosed. We will change our prices as market conditions compel us to, thereby giving our customers the benefit of any fall in prices, instead of beginning the season on a high level and maintaining it throughout as some other seedmen do.

In order to take advantage of our Price Lists, orders should be sent us immediately upon receipt of them. It is probable that many of the grass seeds will fluctuate enough this year so that we will have to change our prices about once a week. We usually change on Saturday.

Shipments

Unless otherwise requested, we make all shipments the day following receipt of order. When requested, we will hold shipments a reasonable time, until customers are ready to have us make shipment.

Important Suggestions

When ordering seeds of us be sure to specify whether you wish shipment made by freight or express. We have the Big Four railroad and the American Express only.

Be sure also to state your county and railroad, as this facilitates your shipment.

We sell absolutely for cash. We accept checks at their face value, drafts or money orders, but if cash in some form does not accompany your order it is our invariable rule to send C. O. D., or if by freight to attach sight draft to the bill-of-lading, payable upon arrival of the seed and after your inspection. Go to the bank, pay the draft and get the bill-of-lading, give it to the freight agent, and he will deliver the seed to you. This method of shipping whereby we attach sight draft to the bill-of-lading is very safe for our customers themselves, as they do not have to pay the draft until the goods arrive, nor do they have to pay at all unless the goods are satisfactory.

We are glad to answer questions and to help our customers with their farm problems. We ask our customers to help us, by writing their questions on a separate sheet, when ordering seed and asking advice at the same time. This will save us much time, which in our busy season we will greatly appreciate, and will expedite the answering of your questions.

Introduction



THE most important question before the American people is neither the tariff, the trusts, nor the eight-hour day. It is the problem of supplying today ninety millions of people with food, and doing it in such a manner that next year we can supply a still greater number from the same acreage under cultivation, and still further, in fifty years from now of supplying double that number of people still from the same acreage of tillable soil, and finally of leaving this soil considerably richer than it is today; if possible, even richer than when first plowed from virgin sod. This question revolves

around a few well understood, well defined points, over which we have studied for years, which we have experimented with, and which we undertake to explain clearly in the pages of this catalogue. Briefly, it depends upon lime, phosphorus, potash and nitrogen. The first three we can buy if necessary, but nitrogen is so costly that it is extremely difficult to purchase it, apply it to our soils, and show a financial gain from so doing, even when we secure fairly good prices. The greatest source of nitrogen is the air, and our common legumes transfer it through the bacteria on their roots to the soil; thus it becomes apparent that the key to successful agriculture is legumes.

For twenty years this firm has been in constant study of all sorts of leguminous crops; we have spent hundreds of dollars testing out promising sorts; and today our farms grow practically nothing else excepting corn and legumes, and our friends come from considerable distances to see the different species of these which we are growing. Long experience has taught us the species which can be counted upon to show a profit; these and these only do we include in our catalogue, and recommend. We believe in the very best of everything; the best system for maintaining soil fertility, and for the production of maximum crops. This involves the necessity of using the best fertilizers, and a very liberal use of the best legumes. By no means of small importance also is the use of the best seeds. Our years of experience have also shown us where and how to obtain the best seeds of these plants, and we believe that today no other firm of seedsmen in the United States is as well qualified to serve their customers along this great line of leguminous plants as we are. When we began business, our competitors said that our seeds were too good; their quality made their cost too high, and that farmers would not buy them. We find just the reverse to be true: that it is only the very best that appeals to the class of trade to which we cater. This philosophy applies equally to our field seeds, and to our garden seeds; we buy the highest priced and the finest quality of each, and our customers will find that the quality of our garden seeds is fully as superior as that of our field seeds.

Alfalfa or Lucerne

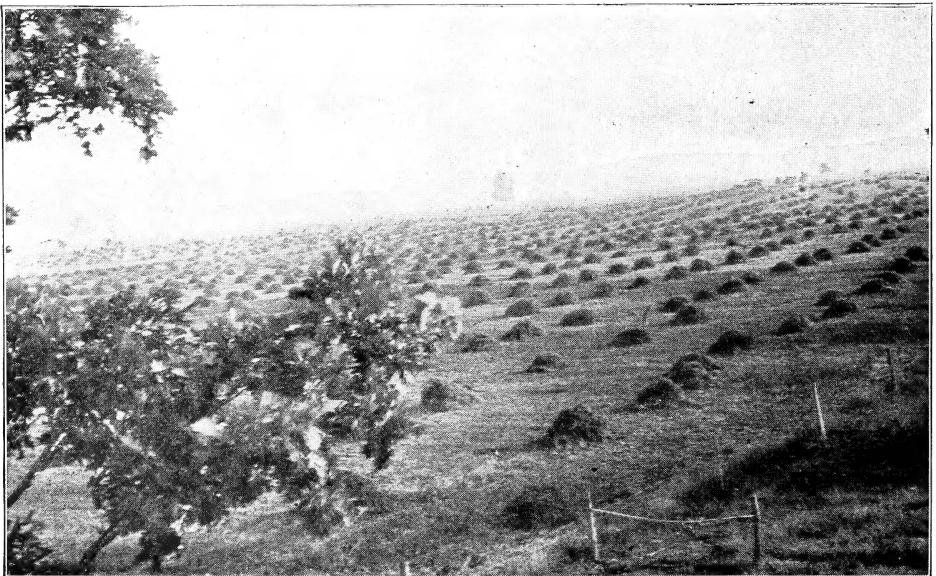
Legumes are the only plants which actually add plant food to the soil; they thus rank of the greatest importance, and permanent agriculture depends vitally upon their use. Some, as mammoth or medium clover, are extremely useful, but only moderately profitable to grow when considered from a monetary standpoint. Alfalfa probably outdistances them all, being a legume which through its great roots brings up soil fertility from great depths in the subsoil, secures moisture for itself from the moist subsoil in time of drought, thus making it the most useful legume that we grow, and in addition it is so valuable either to feed or to sell, that no other crop grown in the Corn Belt excels it as a "money crop."

ALFALFA SEEDING—Much needless mystery has been made of the Alfalfa seeding question. So much mystery, in fact, that many farmers are afraid to try it at all. Jones recommends one method and Smith another, and how is the farmer to tell which is right? We began the study of the Alfalfa question twenty-five years ago, and since that time we have carefully watched fields of it in almost every state in the Union. We have corresponded with thousands of successful growers, and with thousands of other growers who were having troubles, and we really believe now that we are able to furnish reliable data as to just what is necessary to do in order to succeed with this plant.

We could almost sum the matter up in four words: Lime, drainage, humus, and inoculation. Perhaps we have given these in order of their relative importance. Lime is necessary on soils not naturally of limestone formation or filled with limestone pebbles. The importance of this is impressed upon us more and more each year; in fact, we believe today, that there have been more failures throughout the United States on account of insufficient lime in the soil than from any other cause. In order to make it easier for our customers, so easy that they cannot help succeeding, we give later on full instructions for the use of lime and a list of firms from whom the lime may be purchased.

Then as to drainage; there is no use in planting Alfalfa on any soil where water may ordinarily be found at a depth of less than three feet. The Alfalfa may grow all right until its roots strike this water, but then it will probably die.

Fertile soil contains enough humus. Impoverished soils may be so deficient that special preparation must be made before Alfalfa can possibly succeed. Stable manure where obtainable is the very best thing for adding the proper humus to



SIXTY ACRES OF ALFALFA HAY IN SHOCK ON WOODLAND FARM.
FIRST CUTTING.

THE WING SEED CO., MECHANICSBURG, OHIO

the soil; and we would urge its liberal use wherever possible. It might be best to use this a year in advance of sowing Alfalfa, and follow with clean cultivation to overcome what weeds might be sown with the manure, or a good way is to top-dress the Alfalfa during its first winter, using a manure spreader and applying the manure evenly without large chunks that might smother the young plants. On impoverished soils, we would recommend preparation for Alfalfa one or two years in advance, growing such crops as Crimson Clover, Mammoth Clover, Melilotus, Cow Peas, Canada Field Peas or Soja Beans, and preferably turning them under or else pasturing them off, so as to give the soil the greatest benefit possible from them.

We recommend inoculation, not that it is always necessary, but it is an expensive process, and in five cases out of six it will actually pay. This subject is fully discussed later on.

Having determined that our soil is sweet, well drained, and sufficiently supplied with humus, the only questions that remain are: The preparation of a good seed bed, sowing at the proper time of year, and the use of good seed. For the seed bed, it is essential that the ground be thoroughly fitted. It must be plowed, unless it is old ground and mellow, such as corn stubble or black ground, which may be thoroughly disced instead of plowing. It is better to firm the subsoil a little, so that only the surface is really loose. This, because if the entire soil is very loose, the seed may be planted too deep, and also because the Alfalfa seems to prefer the surface being a trifle firmed.

Ordinarily it is not wise to plow up blue grass pasture or timothy meadows and sow immediately to Alfalfa. It is better to grow another crop one year in order to kill out the timothy and blue grass. Both these grasses will crowd the Alfalfa, and simply turning them over does not usually kill all of them unless the ground is farmed one year.

TIME OF SEEDING—On Woodland Farm, for many years, it has been our custom to sow Alfalfa at oat-seeding time, about the first week in April, using Beardless Spring Barley as a nurse crop. The Barley is usually cut for hay the last of June, and after this we sometimes secure a good cutting of Alfalfa hay the first season, although we do not count upon this, and are not disappointed if we do not obtain it. We sow about three to five pecks barley to the acre, on very rich ground not more than one bushel, and eighteen to twenty pounds of Alfalfa seed at the same time, usually using a disc drill, throwing the Alfalfa seed in front of the drill, unless the ground is very loose, in which case we throw the seed farther back to prevent its being covered too deeply, and usually drag with a light drag. The Alfalfa seed should be covered about an inch. Seeding with a grain drill is the least expensive method. We believe a better one is to sow the barley with a grain drill, using a good broadcast seeder for the Alfalfa (probably the wheelbarrow Seeder is as good as any) covering with a good weeder or light drag, and if on very light ground following with a light roller. We believe this will insure very even distribution of seed, and on properly fitted ground, a very uniform covering for the seed. The advantages of early spring seeding are that the rains usually come about the right time for the young Alfalfa, which makes a strong growth throughout the entire season, giving us with the barley enough hay and grain the first year to pay the expenses of planting, and going into winter in the most vigorous shape possible with about ten inches or a foot of stalk standing, enough to hold the snow throughout the winter and induce a fine vigorous growth in the spring. We find beardless barley to be the best nurse crop obtainable. It takes the place of the weeds that would otherwise come, gives us some very excellent feed, and with us does the Alfalfa good and no injury. Oats are not so good, because they shade the ground more, and are more inclined to lodge. We find that the barley hay with the small amount of Alfalfa we obtain with it makes a forage second only to the pure Alfalfa itself.

We cut the barley either for hay when it is in the milk or dough stage, or for grain when fully matured. It is generally a little better for the alfalfa if cut for hay, but the grain ripens about July 12th, and it is rare that the Alfalfa is particularly suffering for cutting by that time.

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We tested winter rye sown in spring as a nurse crop for Alfalfa, and it is fairly good, although we prefer the beardless barley. The rye will grow from six to twelve inches tall and then die, forming a mulch for the Alfalfa. On rich soils not more than two or three pecks of rye should be sown per acre when used for this purpose. Sow at ordinary oat seeding time, or later if desired.

Where no nurse crop is used, it is seldom safe to plant Alfalfa before July 1st, because the weeds will almost certainly choke the young plants, and no amount of mowing will prevent their doing so.

Many of our customers prefer seeding during the summer months; this is an excellent way, frequently succeeding as well as our own, although sometimes failing on account of summer drought preventing the young plants from obtaining sufficient growth to go through their first winter. Many farmers become prejudiced against the early spring seeding, owing to their using oats as a nurse crop, but if they would use beardless spring barley or winter rye, they would doubtless be well pleased with the earlier sowing.

For summer seeding we recommend as a good method having the Alfalfa follow a crop of early potatoes, or it may be possible to plow wheat stubble early enough to secure a stand before winter. An excellent way is to plow the ground early in the spring, harrow it as frequently as the weeds appear, and sow the Alfalfa during July. If the rains come right, such Alfalfa should make excellent growth before winter and be certain to succeed. We really believe that where Beardless Spring Barley may be used as a nurse crop, the early spring seeding is advisable in the states of Ohio, Indiana, Illinois, Michigan, New York, and much of Pennsylvania. The late seeding is certainly preferable in some of the New England states, in Virginia, and the states south of the Ohio River. The reason for the late seeding in these states is that their climate seems to be such that the Alfalfa thrives better when sown late than when sown early, and also in part of these places quack or crab grass and other weeds will give so much trouble that the early seeding is almost sure to fail on account of them. The farther south one goes, the later is it safe to seed Alfalfa. We have many customers in Georgia, Alabama, Mississippi, Louisiana and Texas, who seed as late as November 1st, but their winters are so mild that the Alfalfa never winter-kills, and it comes on the next spring in just as good shape as if it had been sown earlier in the season.



\$2000.00 WORTH OF ALFALFA HAY IN SHOCK ON WOODLAND FARM

THE WING SEED CO., MECHANICSBURG, OHIO

How to Fertilize and Care for Alfalfa After You Get It

Barnyard manure and phosphorus are always the best fertilizers to use for Alfalfa. Use the manure liberally, and also the phosphorus. The best forms of phosphorus are basic slag, bone meal and raw rock. Of these we advise 200 to 500 lbs. basic slag, 200 to 500 lbs. bone meal, 1000 to 2000 lbs. raw rock phosphate. Do not use the rock phosphate unless you apply it with plenty of manure, or unless you are plowing under a lot of vegetable matter.

Establishing Alfalfa is easy; anyone with decently drained land can do that trick. Where the American farmer falls down is in not knowing how to treat his Alfalfa after he gets it.

Our Mr. Joseph Wing is frequently called into consultation by men who have Alfalfa and are uncertain what to do with it. Many times he finds them about to plow up a field of Alfalfa because it is unprofitable, when there is a sufficient stand, and all in the world that the field needs to make it pay splendidly is treatment. Now, what sort of treatment?

Sometimes it needs lime. Alfalfa will be yellow and sickly and discouraged if the soil has not in it enough lime. Ground limestone can be spread on established Alfalfa fields at the rate of about 50 lbs. per square rod, and stirred into the soil in any convenient way, by means of the spring tooth harrow, or the disc, or any sort of tool that will do the work. This may make the difference between a yield of a ton or so to the acre and a yield of three or more tons, if the land needs lime.

We think, after close study in many states, that in nearly all lands east of the Missouri River Alfalfa needs phosphorus. It is a great feeder on this substance. It takes it rapidly out of the soil, and few soils are as rich in phosphorus as they ought to be in any event. Alfalfa meadows ought to be given an annual dressing of phosphorus in some form or other. We do not declare that any one form is under all conditions better than any other; for many acid phosphate will be cheapest and most efficient; for others bone meal may be preferred.

Raw rock phosphate applied before Alfalfa is sown, in connection with manure, has given good results on Woodland Farm. The same substance applied as a top-dressing to Alfalfa already established has given no perceptible results at all, because this stuff needs to come into contact with decaying organic matter.

Basic slag phosphate, having in it both available phosphoric acid and lime, seems the best substance for top-dressing meadows, provided it can be bought at the right price. We present three photographs to show the effect of top-dressing an unproductive Alfalfa field on Woodland Farm in 1912. In June the field was mown, and the crop of hay was seen to be disappointing. Figure 1 illustrates about what it was like at the first cutting. There was a thick stand; it needed only to be fed. As soon as the hay was off, we harrowed it thoroughly with the spring-tooth alfalfa harrow (made by Bucher & Gibbs, Canton, Ohio) and applied basic slag (Key Tree Brand Thomas

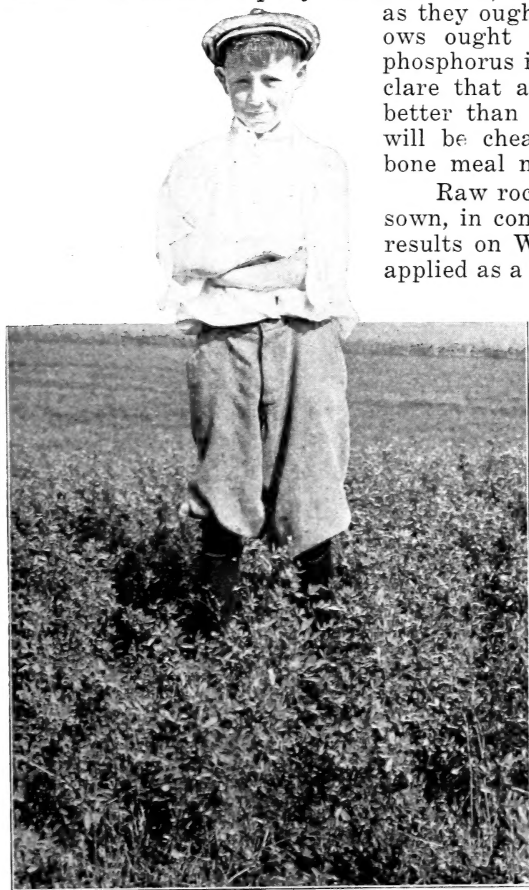


Fig. 1
UNTREATED ALFALFA
(Courtesy of the Breeder's Gazette.)

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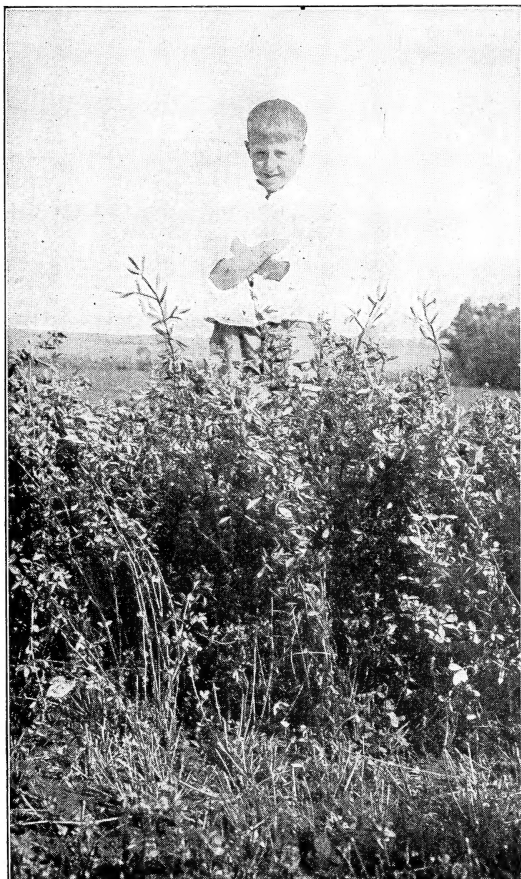


Fig. 2
ALFALFA TREATED WITH BASIC SLAG.
(Courtesy of the Breeder's Gazette.)

Take an alfalfa harrow and after the first or second cutting harrow it well to take out the foxtail and other grasses and weeds.

Feed it yearly with phosphorus. If you can get it, take basic slag; if that is unavailable, use acid phosphate or bone meal.

If your land is peaty or light and chaffy, add potash to the fertilizer, and your Alfalfa will do well there.

We believe now, that given harrowing, fertilization and drainage, Alfalfa will endure with profit for a good many years on any farm in eastern America, provided that it is not cut too late in the fall and is not covered with an ice sheet in winter.

Do not mow Alfalfa later than the first of September if you can avoid it, unless you desire to plow it up in any event. A big growth to stand on the field over winter makes for fine, strong Alfalfa the following year.

We are so much impressed with Key Tree Brand Thomas Phosphate Powder, both for starting Alfalfa and for top-dressing it, that we have made arrangements with the leading importers of this stuff, and are prepared to supply it in any amounts. We ourselves use 500 lbs. of it to the acre in laying down alfalfa meadows. It is marvelous what a growth it stirs up the first year; we quickly get our money back.

SEED—Good seed is of great importance. We have studied Alfalfa for so many years that we pride ourselves very much upon our ability to choose the very best seed. Alfalfa seed coming from Arizona, South America or Arabia,

Phosphate Powder), in strips, using from 500 to 1000 lbs. per acre, leaving strips untreated, and applying acid phosphate at the rate of about 500 lbs. per acre to another strip.

As soon as the fertilizers were applied, the land was again harrowed with the spring-tooth harrow to bury the fertilizer a little way. The effect was marvelous: It can be seen in Figures 2 and 3, which show the third cutting, which made on the fertilized strips 3000 lbs. to the acre of dry hay. In Figure 3 is seen one of the untreated check strips, also beyond it the end of an acid phosphate strip. Please observe that in Figure 3 you are looking across the ends of the strips just as the mower left them at the third cutting in early September.

Making a careful estimate of the cost of this fertilization and its result, we learned that the extra hay secured in 1912 cost us but \$2.42 per ton, and the fertilized strips were so much more vigorous than the unfertilized ones, that it is very evident that the yield in 1913 would also be greatly influenced.

To sum up, if you have Alfalfa already established, you ought to do these things:

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will grow all right the first year, and then will probably winter-kill the first winter, especially in any of the Northern states. We find that the very best seed in the world, that which is freest from dangerous weeds and which possesses the greatest vitality, is produced in our own United States, particularly in the north-western part. Also it is better if grown on non-irrigated soil. All of our seed comes from these Northwestern states, is non-irrigated, and we cheerfully guarantee it free from Alfalfa's most deadly enemy, the dodder. When you receive seed from us, send sample to your Experiment Station, and if they detect any dodder in it, return the seed immediately, and either get your money back or more seed. If they find any trefoil, you may do the same thing. Trefoil is a harmless little clover, but it is added to the Alfalfa as an adulteration, owing to the seed being inexpensive and difficult to distinguish from the Alfalfa seed itself.

We feel that we have just cause for being proud of our Alfalfa seed, for each year we will sell to practically all of the Experiment Stations and agricultural colleges in this and adjoining states and to the U. S. Government at Washington, for experimental work. No class of buyers is so particular as this.

Our skill in selecting Alfalfa seed has built up this branch of our business, until today we believe that we retail as much as any other three retailers east of the Missouri River. During the busy season, a carload lasts us from six to twelve days. We secured this business by selling the best seed, and not by extensive advertising.

In some of the far Southern states, an enemy constantly to be fought is the Johnson Grass. In some of these states Alfalfa seed is produced, and is very likely to be mixed with this pest.

We guarantee our seed absolutely free from this Johnson Grass, and growers in any country who are troubled with it, may with perfect confidence purchase our seed.

ALFALFA FOR THE POULTRYMAN—The poultryman will find great profit from having a run of Alfalfa. This should not be too small a space, but large enough so that the poultry can forage at will without injuring the plants, and so that he may cut the hay regularly and save it for winter feeding. Poultry thrive upon a diet composed chiefly of Alfalfa, with some grain in addition.

ALFALFA FOR THE DAIRYMAN—No other food forms so good a basis for the ration of a dairy cow as Alfalfa, the reason being its extreme richness in protein, its easy digestibility, and the additional reason that the cows love it so,



Fig 3.

ENDS OF FERTILIZED AND CHECK STRIPS AS DESCRIBED ON PAGE 8.

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EFFECT OF BASIC SLAG ON ALFALFA MEADOW. SEE PAGE 8.
(Courtesy of the Breeder's Gazette.)

and eat so greedily, Alfalfa growing countries have a great advantage over other countries in the dairy business, so that it is well for the dairyman, wherever he is situated, to begin to consider how he may make his own soil an alfalfa-growing soil. It has been found that the cost of milk production can be cut square in two by the use of home-grown Alfalfa. A ton of Alfalfa hay, early cut and nicely cured, is worth as much pound for pound as the best wheat bran for food for the dairy cow. Even ordinary Alfalfa hay is worth nearly as much as wheat bran; so that it is clear to the Eastern dairyman, who must pay \$25.00 a ton for wheat bran, a field of Alfalfa yielding no more than three or four tons per acre a veritable gold mine. Governor Hoard has found that with Alfalfa in the dairy ration, it is necessary to use only about half the amount of grain that must be fed when other forage is provided. In truth, with Alfalfa hay and corn silage, little or no other food is needed to keep the dairy cow in the most profitable producing condition. We thus emphasize the importance of Alfalfa to the dairyman, because among the many thousands of Eastern dairymen, the margin between cost of production and selling price of their products is so small, that they are in a rather discouraging condition, and this condition Alfalfa will relieve better and easier than any other thing. There was a time, only a few years ago, when it would have seemed not worth while thus to attempt to raise the hopes of the dairyman, for then it had not been demonstrated that Alfalfa could be grown away from the "Alfalfa Belt." But since then we have learned the few and simple requirements of the Alfalfa plant, and now we do not hesitate to affirm that we can grow Alfalfa anywhere, upon any farm in the United States, not at too high an altitude if the few simple but essential conditions are complied with.

TIME TO CUT ALFALFA—We usually cut it when about one-fifth of the plants begin to show bloom. A somewhat better way of ascertaining the proper time is to watch for the buds at the base of the plants and cut when they appear above the ground. These buds are the beginning of new stalks, and their appearance indicates that the plant is ready to make another crop.

ALFALFA AS A PASTURE CROP—It is especially adapted to being depasturized by horses and hogs, and perhaps the greatest profit comes from such use. The practical difficulty with depasturizing Alfalfa with sheep and cows is, that being a clover, it sometimes causes bloat, similar to clover bloat. The

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best preventive of bloat is to have the Alfalfa mixed with grasses in the pasture. When this is done, the animals eating the two together are very much less apt to bloat. The best grass to mix with Alfalfa for pasture is brome grass (*Bromus Inermis*), or Tall Meadow Oat Grass (*Avena Elatior*).

In pasturing Alfalfa, to get the best results, one should not turn on it before the plants have grown nearly to the blossoming stage; furthermore, the pasture should be so large that the animals will not eat it down closely. It should be mown at least twice during the season and made into hay. It will not do, however, to pasture the field with sheep or cattle immediately after it has been mown, this being the surest known method of inviting disaster. After Alfalfa is mown, it is not safe to turn onto it until the plants have reached the woody stage. Thus treated, Alfalfa pastures will last for years, and afford an astonishing amount of nourishment.

All stock should be taken off of Alfalfa pastures by the first of October, or in the Eastern states, at the beginning of hard frosts; this, both for the good of the Alfalfa and for the good of the animals themselves. It is dangerous to depasturize frozen Alfalfa, and it is not even wise to cut it for hay. A profitable scheme sometimes practiced is to break an old blue grass pasture, plow it rather deep, fertilize it well, and seed it down to Alfalfa. A good stand of Alfalfa is almost assured by this method, and while the blue grass comes up immediately and fills in between the Alfalfa plants, within a few years, the amount of combined herbage yielded by this practice is almost incredibly great, the grass itself yielding more than it did before the Alfalfa was sown upon it. Alfalfa thus sown will not last as long as when the grass is absent, but while it is there it is extremely profitable.

In any of the states east of the Missouri, we think that farmers who pasture Alfalfa with cattle and sheep may be reasonably sure to have some losses, no matter how careful they are. We have never succeeded in pasturing it ourselves without some losses, but we believe that it is sometimes more profitable to pasture Alfalfa and lose a few sheep or perhaps a steer, than it is to handle our stock on other feed without this loss.

ALFALFA TURNING YELLOW—This may be caused either by a leaf spot or rust, or it may indicate that conditions are not right with the plant, that it needs lime, drainage or inoculation. Mowing will usually check the rust; the other troubles are fully discussed later on.

INOCULATION—All legumes have tiny bacteria that work on their roots, forming "Nodules." These bacteria draw nitrogen from the air, and supply the plants with it, and also add it directly to the soil. Without these bacteria the legumes will soon perish, although most of them seem to find their proper bacteria in almost any soil. Alfalfa is an exception, and it nearly always pays to supply its bacteria artificially. This may be done very inexpensively. Obtain soil from some nearby Alfalfa field, and apply it at the rate of one hundred pounds per acre, sowing it late in the afternoon and harrowing it in immediately before allowing the sun to strike it. This is the best way to inoculate. Soil from around the sweet clover or Melilotus roots answers equally well. The Government will furnish inoculation of another sort free; this usually succeeds, but not always. It may be obtained from the Bureau of Plant Industry, Washington, D. C. Another excellent way is to sow a few pounds of Alfalfa with your red clover. After the clover is plowed up, sow to Alfalfa, and you will probably have the field inoculated.

We always refuse to sell soil from our fields, but this year we have secured from a neighbor a few tons of thoroughly inoculated soil, and while it lasts we will furnish this to our customers at the following prices: 100 lbs., \$1.00; 500 to 1000 lbs., 80c per cwt; shipped in jute bags without extra charge for containers.

THE WING SEED CO., MECHANICSBURG, OHIO

Dr. H. Somerville, Chest Springs, Pa., whose advertisement appears on page 14 of this catalogue, is prepared to furnish inoculated soil, and we advise our customers who want inoculation to write to him.

Lime is one of the master keys to permanent agriculture. We must have nitrogen or else all the plants perish. The only way that we can afford to secure nitrogen is by drawing it from the air through the bacteria on the roots of leguminous plants, and these bacteria simply cannot live in soil that is deficient in lime; hence the absolute necessity of being sure that we have enough lime in all farming soils.

LIME IN THE SOIL—Alfalfa thrives best on soils that are most abundantly supplied with lime. It absolutely fails where lime is deficient. Nothing will take the place of lime, and we believe that there have been more failures throughout the Eastern States owing to this deficiency than from any other cause.

KINDS OF LIME—Ground limestone is now manufactured in many places in the United States, and sold usually, where made, for about \$1.25 per ton. The finer it is ground, the more quickly is it available. It should be applied at the rate of two to four tons per acre; although where it is inaccessible, and therefore costly, much lighter applications are used with good results, although not so lasting. Sometimes one may get crushed limestone screenings, much of it as fine as sand. This stuff is used for concrete work, walks and ballast, and often may be bought as low as 50 cents per ton or less. When the ground limestone is not available, and this coarser material is, we advise its use. Put on more of it, and eventually every bit of it will become available. It will last for many years in the soil, giving out its beneficial influence constantly. Many farmers having ledges of limestone upon their land can well afford to grind their own limestone at home; a machine capable of grinding a little more than a ton an hour and taking in stones 11x13 inches in size costs about \$600.00. These machines are very durable and the expense of operating them quite light. Various firms manufacture this machinery. To save correspondence, we will mention the Jeffrey Manufacturing Co., of Columbus, Ohio, who make suitable grinders for farm use, and the Pennsylvania Crusher Co., Machesney Building, Pittsburg, Pennsylvania. The Eureka Stone & Ore Crusher Co., Cedar Rapids, Iowa.

OTHER FORMS OF LIME—Very long continued experiments, especially in Pennsylvania, show that caustic lime attacks the humus of the soil, and that at every Experiment Station where used, ground limestone rock or ground oyster shells applied at the rate of about two tons per acre every two or three years have given decidedly better results. The caustic lime at the Pennsylvania Experiment Station ate up \$7.00 worth of humus annually when used in just sufficient amounts to correct the acidity. We think that caustic lime should not be applied to any soil.

Agricultural lime, or Hydrated lime, is simply caustic lime that has been ground and has had water added. When it can be obtained at a reasonable price, it is probably safer to use than caustic lime.

AIR-SLAKED LIME—Thoroughly air-slaked lime is really the same thing as ground limestone, and there are places where caustic lime may be obtained cheaply but where freight makes ground limestone prohibitive. These places should use air-slaked lime, but from six months' to a year's time should be given this lime for thoroughly slaking. It should be used at the rate of two tons per acre every two or three years. It is unwise to sow lime and acid phosphate at the same time, as the lime would neutralize the phosphate; this would not apply to untreated phosphate rock or to basic slag.

LIME NOT EVERYWHERE NEEDED—Because of the wide-spread interest in Alfalfa and lime, we get letters asking about the application of lime, from regions where we cannot think lime is needed. Hardly anywhere is it needed in the arid region, in the Dakotas, in Nebraska, perhaps nowhere in alkaline soils; probably not in any place where limestone gravel is mixed through the soil by the glaciers, would additional lime be especially needed. When it is somewhat difficult to get stands of red clover; when "sorrel" comes in the land, and crab grass

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crowds out the Alfalfa; when the Alfalfa plants have a sickly yellow appearance instead of a dark vigorous green; then one may safely assume that lime is needed; and in the humid regions of the East, wherever Kentucky blue grass and white clover is not the natural carpet of the soil. Alfalfa growers should take heed of the need of more carbonate of lime before sowing their seed.

ALFALFA AND TILE UNDER-DRAINS—The question is often asked: "Will Alfalfa stop tile under-drains?" On Woodland Farm with probably eighteen miles of tile under-drains, only a few hundred yards have given trouble from being stopped with Alfalfa roots. These places where trouble has occurred are where running water flows through the tile continuously from perennial springs. In no instance has the Alfalfa given trouble to ordinary farm drains where the tiles become dry in summer.

A THIN STAND OF ALFALFA—It rarely pays to thicken Alfalfa. The seed will usually come up all right, but it will mostly perish throughout the first season. Discing will make the Alfalfa stool out more and thereby help the stand, or Clover may be sown with the thin Alfalfa with good results.

Another very excellent method which we recommend is plowing the Alfalfa up, and plowing it quite deeply. This will not kill nearly all of the young plants. Then immediately re-seed, and the second time you will be almost certain to secure an excellent stand of Alfalfa.

WEEDS IN ALFALFA—Good soils are frequently stored with weed seeds; yet a thorough cultivation of the ground the year preceding the sowing of Alfalfa will accomplish much. Ordinary weed seeds are pretty well destroyed by the mower running over the ground two or three times the first season. Canada thistles are said to be eradicated by the growing of Alfalfa, and many other serious pests including *Convolvulus Arvensis*, variously styled Bindweed, Wild Morning Glory or Wild Pea Vine.

Kentucky blue grass and other grasses frequently creep into Alfalfa and crowd it. If left alone, they will eventually choke out the Alfalfa. We believe the best thing to prevent this is a spring-tooth harrow with the teeth sharpened into diamond-shaped points not more than one inch wide. Use this harrow immediately after any cutting. It will remove Kentucky blue grass, foxtail, and many weeds, and its continued use will probably keep meadows almost entirely free from weeds, while it will injure hardly any Alfalfa plants. The diamond-shaped points will prevent any undue ridging of the loose earth thrown up.

Sometimes a little Sweet Clover (*Melilotus*) is unavoidably present in Alfalfa seed. This need give no concern, since the natural mowings given the Alfalfa will eradicate it in two years. There are weeds, however, that will get the better of Alfalfa, and that right speedily. One of the worst is dodder. Not many farmers know dodder when they see it. It is a parasitic vine having an almost leafless yellow stem as large as a small twine string, which runs through the Alfalfa, twining around the stems, sending little rootlets in to suck the juice of the plant. Dodder begins its life from a seed dropped to the earth when the Alfalfa is sown; but, after having had a brief experience with its roots in the soil, it leaves the earth and roots only in the growing Alfalfa, which it binds together in a death grip, making a dense tangle of yellow vines and slowly dying Alfalfa plants.

Farmers cannot afford to treat dodder as they would any other weed. It is so deadly that it must be stamped out immediately, or it will become a very serious pest, and the methods used to exterminate other weeds will not answer for this one. If there are only occasional small patches to be found, mow the Alfalfa in these patches before the dodder begins to bloom; then, in a few days, scatter straw over the infested areas, and burn it. This may kill the Alfalfa plants, but it will probably kill the dodder also. If your field is badly infested, there is nothing to do but to plow it up, and plant it to corn or some cultivated crop for one or two years.

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Dodder infests clover just as frequently as it does Alfalfa, and it is just as dangerous in the clover as it is in the Alfalfa. Farmers should take great pains to prevent this pest from becoming established in their land, and should send samples of their seed to their Experiment Stations for analysis before seeding.

Our own Alfalfa seed and also our Clover seed are guaranteed free from this pest. If your Experiment Station finds any dodder in our seed, we will gladly take back the seed and return your money.

ALFALFA IN CORN—We cannot recommend seeding Alfalfa in corn at the last cultivation, as many wish to do, because the corn nearly always shades the Alfalfa so much that it will not thrive until after the corn is cut; also the corn takes practically all of the moisture from the soil, causing the Alfalfa to suffer from drought; and it usually happens that we have most of the dry weather between the time of the last cultivation of corn and fall, so that all three of these causes will operate against the Alfalfa. We have seen many splendid successes from this method, and many failures. We think the chances of success by this method to be about equal to the chances of failure.

CLIPPING ALFALFA—Alfalfa sown in April with a nurse crop will need not more than one clipping after the nurse crop is removed. If the summer is cool, and weeds are not threatening too much, it will not need to be clipped at all. Better mow it too little the first year than too much. When you remove the nurse crop, mow it close to the ground, no matter what size the Alfalfa plants are. Then, if you clip the Alfalfa, do so by August 15th. There is not the slightest danger of Alfalfa's smothering itself by making a rank growth late in the summer or fall, and going into winter even knee-high without being clipped. If Alfalfa is sown in July or August, it should never be clipped the first year.

MAKING ALFALFA HAY—Alfalfa hay must be cured in the same manner as Red Clover, with this difference, that as the leaves of Alfalfa when dry are extremely brittle, care must be taken to prevent their loss. This simply necessitates raking the hay when still quite tough, and it should also be shocked before it is bone dry. Alfalfa hay will cure admirably if raked quite green, shocked immediately, and allowed to stand in the shock for several days. If this method is used there will be very little loss from storms, and the hay will be of the finest possible quality. Hay caps may be used, if desired, with excellent results. When the hay is cured in the shock, open up the shocks to the sun and air for an hour or so before putting the hay into the barn. Alfalfa hay will stand more punishment from storms than any other hay that we know of. It will also keep excellently in the stack, although we think it a little more difficult to stack than Timothy hay. It may be put in the stack or mow with a trifle more sap than any other kind of hay.

Alfalfa hay usually heats somewhat and frequently becomes discolored, but stock relish this discolored hay fully as much as if it were of perfect green color. In stacking we now use cables in preference to a hay derrick. We have a Loudon Jr. cable carrier, which gives perfect satisfaction, and we are using a Loudon grapple fork for unloading from hay sleds, and find this to be the most satisfactory fork for this purpose. At the barn we unload with a Loudon Jr. carrier, using a triple hitch to the rope; this permits the use of only three-fourths inch rope, a very satisfactory size. We use either the Loudon grapple forks or the new Myers double harpoon fork, one at each end of the load. The new Myers fork is hinged in the center, and does not become bent out of shape as the old style harpoons did. Then, we put the sling in the bottom of the load for cleaning the wagon. Using this outfit we have no trouble in unloading two or three thousand pound loads of Alfalfa hay with three or four hitches of the fork.

Inoculated Alfalfa Soil

Especially prepared for inoculating new land for the growing of Alfalfa. 75c per cwt., or \$10.00 per ton, f. o. b. cars. Send for free booklet "How to Grow Alfalfa." Dr. H. Somerville, Chest Springs, Cambria County, Pennsylvania.

Corn

No one needs to be told of the importance of the corn crop. All we care to know is how to grow the most of it, the varieties most certain to produce well, and those having a fair percentage of shelled corn. We are all studying these questions very carefully. The up to date farmer knows, both from his own observation and from the teachings of corn experts all over the country, that maximum yields depend upon absolutely established laws. We might mention these briefly. Fertility of the soil, the conditions of the seed bed and the tillage after planting, and climatic conditions. These conditions depend upon the farmer himself, and upon nature. The other laws influence the grower of corn for seed purposes. These might be named as the effect produced by the ear-to-the-row test plots, the effect produced by too close breeding or inbreeding, by cross-breeding and by selection of the proper types both of ear and stalk, and selection of large ears from hills of three. Taking these points backwards, it has been positively demonstrated time after time that a large ear growing in a hill of three stalks contains enough inherent strength to reproduce itself and make a heavier yield than another ear equal in size but growing in a hill of only one stalk. This is one way in which everyone is likely to err when selecting seed corn from the field. Usually this seed is selected from the piles of husked corn, and frequently the large fine ears selected come from hills containing only one stalk. The only way that one can get the maximum out of his corn is to go through the fields before husking, and select large fine ears from hills containing three stalks. This we are doing now with all our varieties of corn.

Cross breeding, that is, crossing two distinct breeds of corn, requires a great deal of skill, and the ordinary result produced is a variety of corn so lacking in uniformity that it will take many years to make it look like all of one breed. By far a better way of securing a fine character of corn is by selection and breeding in its own variety only, but improving this variety up in any desired way until it meets with your approval. Probably it is possible to breed corn too closely, and weaken its vitality, just as it is possible to inbreed live stock, although in actual practice we think this danger might easily be exaggerated. At any rate, fewer mistakes of this sort come under our notice than with the indiscriminate crossing of two breeds, or of injudicious selection. The ear-to-the-row test plot is widely used, and its principles are very well understood by most intelligent farmers today, most of them appreciate the improvement which can be effected in corn by this method, and a great many farmers are employing this system largely to improve their corn.

Briefly, this system consists of selecting the very best ears possible, planting half of each ear in a separate row with a stake showing the number of the ear, the other half of the ear being retained, numbered to correspond with the stake. At the end of the season, each row is weighed separately. If the ground is uniform in fertility, as it should be, it is obvious that the rows making the heaviest yield come from the heavy yielding strains of corn, and that the half-ears from which these heavy yields were obtained are the most valuable ones of the lot. It frequently happens that two rows side by side from ears that are apparently of equal value will vary greatly in their yield; many times one will yield double what the other does. If this is the case, then seed picked the first year from the high yielding row would be crossed with the pollen from the low yielding row beside, and would probably represent about the average of the field in value. What is ordinarily done is to reject most of the seed corn from the breeding plot the first year, but to carefully compare each row as to yield, quality, time of maturity, etc., and, as we have learned from this comparison which ones are the most valuable parent ears, the second year we isolate those which have shown the greatest promise, planting the other half of these good ears, and in such a position that they cannot easily be crossed with any low yielding corn. The seed can then be saved from the second year's breeding plot for the multiplying plot the following year, and we will have established a strain all of whose parents are known to be high yielders and of good quality. This is our regular practice year after year. We try each year to find as many high yielding ears as possible, and not only to improve the yield but also the quality by this selection. This method reduces corn breeding to a comparatively exact science, as exact as anything that we have about the farm. By its use we certainly eliminate all of the low yielding strains, and it also enables us to control the quality and the type in any desired way.

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Hybridizing, hand pollenization, and detasselling of alternate rows in test plots are all more or less recommended by corn experts, although with a little disagreement as to the results actually obtained by these methods. What we are doing to improve seed corn is ear-to-the-row test plot work, selection of corn all from one breed instead of crossing breeds, and selection of large ears from hills of three to grow in test plots and multiplying plots. All these methods are absolutely known to produce good results, and to improve the corn in yield and quality whenever they are carefully and properly carried out, and we feel that in doing this work we are doing practically everything that man knows how to do today in securing the greatest yield, the finest quality, and the proper date of maturity. Our constantly increasing sales of seed corn surely indicate that our corn is making good, and the thousands of letters we receive from pleased purchasers emphasize this. All of our corn is selected early in the fall, just as early as husking can possibly commence. It is then taken into our large, steam-heated warehouse, placed in crates in such a manner that the corn does not touch itself and that perfect ventilation is secured, or much of the corn, especially when coming in very early in the fall, is strung and hung from the joists until thoroughly dried out, before being placed in the crates. Then, when it is thoroughly dried, the corn which is meant for shelling is re-sorted, every ear which does not suit us is thrown out, the butts and tips are shelled off and sold to the elevator, the rest of the ear being shelled and graded, all irregular grains being removed, and the corn placed in condition to use with an edge drop planter. Customers visiting our warehouse at shelling time hardly believe their own eyes or senses when they find how absolutely dry this corn becomes. Some years our seed corn when coming into the warehouse is so dry that it shells readily in handling and crating will shrink 33 per cent. before time for sending it out. Shelling off the butts and tips removes 10 per cent. of the weight of the corn, the grader frequently removes another 10 per cent., the frequent handling and re-sorting which the corn receives discards still more, so that by the time this shelled corn is ready to go to our customers, we actually have only about 45 per cent. of the corn which we have taken in left to sell, the rest having been used up by shrinkage, or discarded in various ways, and this, together with our experiment work, brings the cost of our seed corn to ourselves up pretty high.

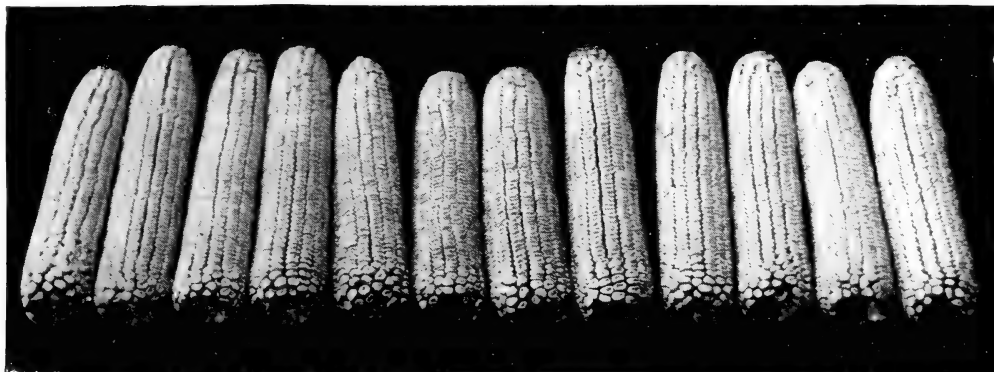
Shrinkage takes 30 to 34 per cent., the butts and tips shelled off take 10 per cent., the grader at least 5 per cent., and other causes at least 5 per cent., and usually 10.

On the other hand, our customers are actually getting over two bushels of seed corn where they would have but one, if it were not so thoroughly dried, and so carefully sorted, nubbed and graded.

Some seedsmen claim to do almost impossible things. They claim to do everything which we do and in addition to germinate each ear, and to handpick each bushel of shelled corn after it has been nubbed, tipped and graded. Even then, they offer this seed at as low a price as \$2.50 per bushel. Handpicking shelled corn, where careful work is done, costs \$1.00 per bushel; germinating costs 50c to \$1.00; the loss from shrinkage from various causes takes out half the corn, while the labor of handling the corn, even as we do, amounts to not less than 50c per bushel. Supposing that these dealers paid \$1.00 per bushel for their seed corn; the actual cost to them, doing what they claim, would amount to about \$4.00 per bushel. There is something wrong somewhere when they claim to do all this, and yet to sell pedigreed corn at \$2.50 per bushel.

WING'S IMPROVED WHITE CAP CORN—We have been growing this variety on our farm for fifteen years continuously, and it has received more attention and work from us than the other varieties which we handle, because we were growing this corn and improving it for our own use years before we ever thought of selling the seed. This corn at some time before we secured it, was cross-bred, being a pure white and pure yellow crossed. The result is a variety with the grain mostly white, but showing a tinge of yellow throughout cobs sometimes red and sometimes white. Personally we are partial to a white cap corn, because the white blood contained in it makes it adapted to poor soils, while the yellow makes it early maturing. This variety has been tested beside many other breeds of corn on our farm, and has never been outyielded by any of them. We consider it the safest and surest kind which we have to offer, provided you have one hundred and twenty days in which to mature your corn. We think this to be our best variety either for rich or poor soils, for grain or for ensilage, provided you want an ensilage that matures.

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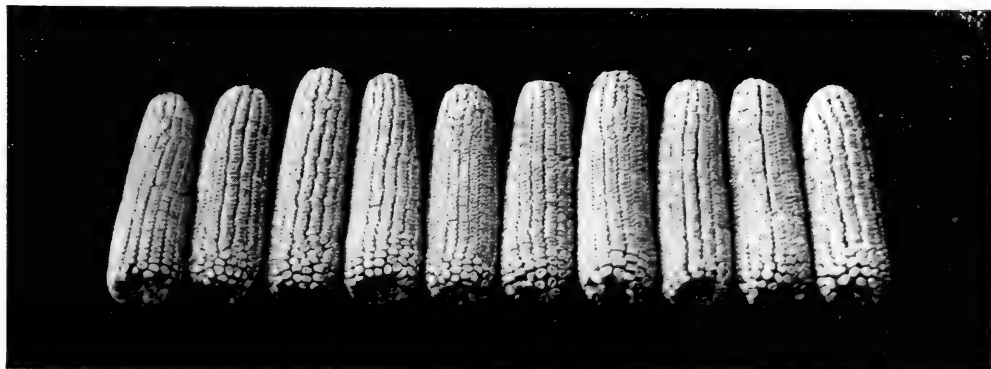
WING'S IMPROVED WHITE CAP CORN

Three acres of this variety has yielded for us one hundred and forty-seven bushels per acre.

Ears medium to long, cob medium sized, good depth of grain, as deep as it is practical to have it in this climate and yet mature; the greater the depth, the later the corn becomes. Fodder medium, about as large as is advisable in this climate without making the corn too late. This variety will mature satisfactorily in an ordinary season as far north as latitude 41 degrees. It does very well indeed in our own latitude or south of us. It succeeds all along Lake Erie in Ohio. In 1908, 50 acres averaged 100.1 bushels; in 1909, 100 acres averaged about 85 bushels; in 1910, 100 acres again averaged about 85 bushels; in 1911, 85 bushels; this year, with miserable weather conditions early in the season, the crop looks like 95 bushels, sound and of splendid quality.

We find our White Cap Corn to stand punishment of all sorts better than almost any other variety which matures in the same period, and believe that we will secure as great a yield as is obtainable with any other variety, either on rich or poor soil.

WING'S 100 DAY WHITE CORN—This is a white corn which matures here in about 115 days. It is characterized by medium to small sized fodder, smaller than White Cap, about the same as the Clarage, medium sized ears of great weight, and very solid. It is an excellent yielder. As stated, its ears are all medium sized, but it is a well-known fact that a large eared corn is not necessarily a heavy yielder, and we can recommend this corn as being as heavy a yielder as any one hundred and ten day corn which is grown in this state. It has shown itself each year to be a splendid keeper, little damaged by wet weather, and it stands drought, poor soil, etc., excellently. We have sent this corn into all parts of Ohio with good results. It will do well anywhere in the latitude of Ohio, and may be safely carried as far north as latitude 42 degrees.

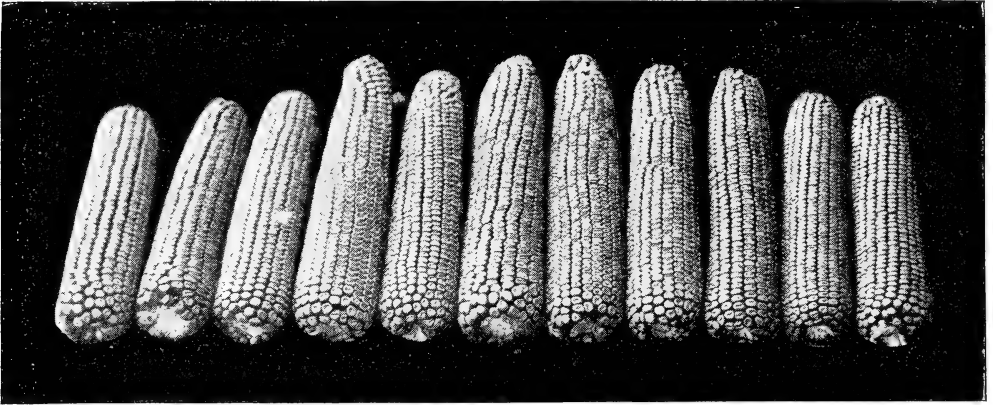


100 DAY WHITE

We have repeatedly seen yields of one hundred bushels per acre on large acreages from this corn.

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REID'S YELLOW DENT—Reid's Yellow Dent has for years been one of the heaviest yielding varieties of corn in the United States, and also a variety yielding a large proportion of seed ears. Its disadvantages for our own section have been that it was a trifle too late, also some strains of this corn were quite shallow grained. We are breeding a strain of it, decidedly the earliest that we have ever found, and also one whose grain suits us the best of any we have ever had.

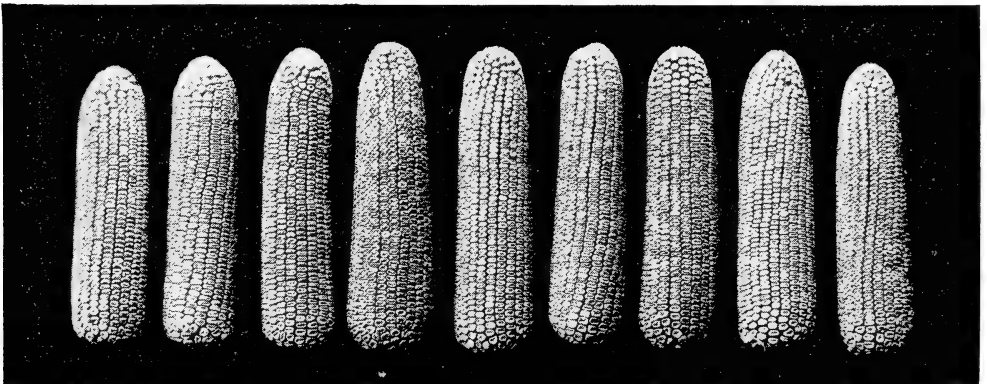


REID'S YELLOW DENT

On good ground there should be no difficulty whatever in securing a yield of 100 bushels or over of this corn.

For standing punishment we put this corn beside Wing's Improved White Cap. The fodder is medium sized, the ears not too high on the stalk. The corn gets sound and fully matured for us each year, ripening in about the same time as our other one hundred and twenty day varieties. We question if we have a variety of yellow corn which will outyield our Reid's when grown side by side. It can be grown as far north as 41 degrees.

FUNK'S YELLOW DENT—This variety does not differ radically from the Reid's Yellow Dent which we are offering this year. We consider the chief difference to be in a little longer ear, that is, the ear is a trifle more slender than the Reid's, and grain is a trifle better shaped. In yield, time of maturity, and general characteristics there is little choice between these two varieties, and both of them are splendid, high-yielding sorts. The strain of Funk's Yellow Dent which we are handling came direct from Funk Bros., Bloomington, Ill., four years ago, and has been carefully selected and kept pure. This corn may be safely moved to latitude 41 degrees.

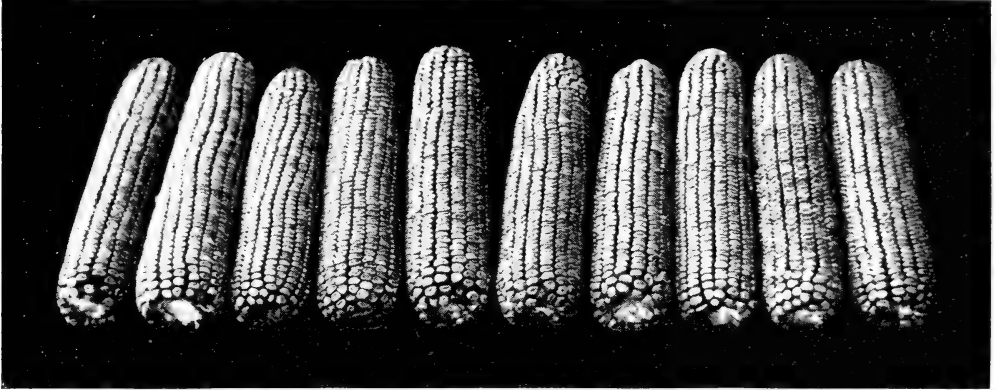


FUNK'S YELLOW DENT

There should be no difficulty whatever in obtaining on good ground a yield of 100 bushels or over of this corn.

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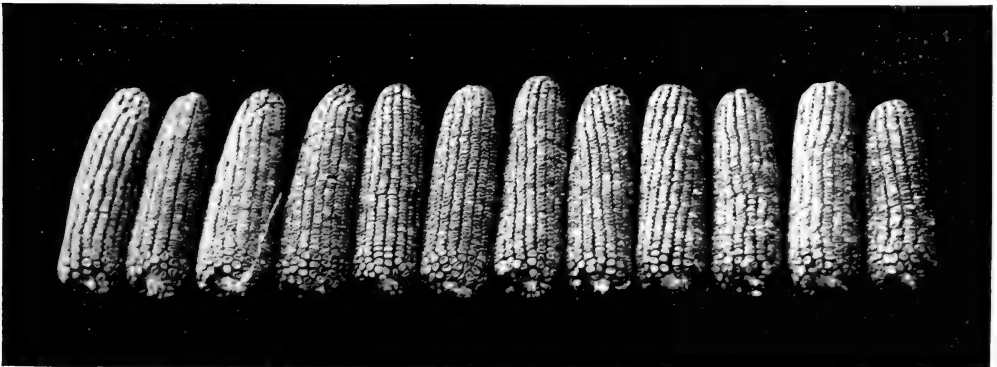
WING'S 120 DAY YELLOW—This is our most popular yellow corn, and we consider it one of our best varieties. Placed side by side on rich ground, our Improved White Cap and all of our yellow varieties yield, we believe, practically the same, the preference being slightly in favor of the White Cap. On poor soils, our opinion is that White Cap, Clarage, and Reid's Yellow Dent might lead the list, but Wing's 120 Day Yellow excels in being adaptable to many different soils and latitudes, maturing early, and having splendid quality at all times. This corn usually matures in one hundred and ten days. Type of grain is splendid, deep enough and of excellent proportions; the proportion of corn to cob is excellent. Fodder medium sized, a trifle smaller than White Cap. Can be safely grown as far north as latitude 42 degrees.



120 DAY YELLOW

One of our customers in New York State grew one hundred and twenty bushels per acre. Some of our own fields are yielding one hundred and twenty-five, but we feel that this yield can be surpassed in Ohio if the corn be given proper advantages.

CLARAGE—The longer we grow this variety, the better pleased we are with it. On rich ground it yields as heavily as the best of them, and on poor ground we put it beside Wing's Improved White Cap. Its ears are usually medium sized, but this has no effect upon its yield. Its fodder is medium sized, possibly the most valuable fodder for feeding of any variety we sell. It ordinarily matures in one hundred and ten days. It is a very heavy solid corn with splendid quality of grain, the kind of corn that shows a large proportion of seed ears. Will mature as far north as 42 or 42½ degrees.

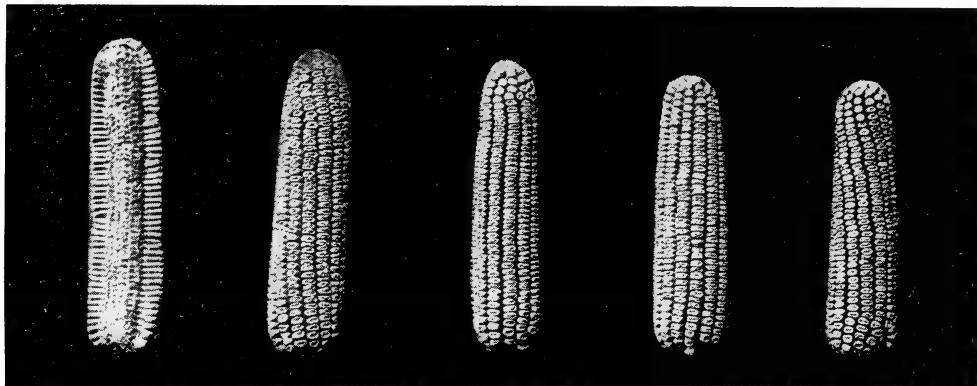


CLARAGE

This corn at present is yielding right alongside of all of our other yellow breeds.

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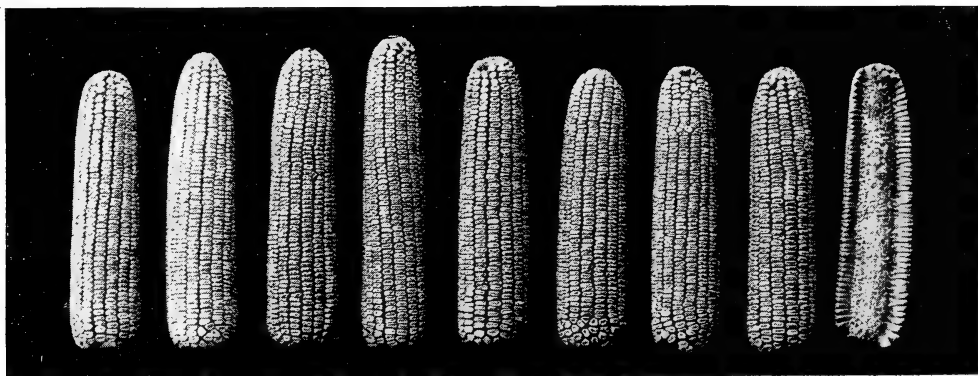
WING'S 115 DAY YELLOW—This variety we recommend to people who desire great depth of grain. In this particular we know of no breed of corn that excels Wing's 115 Day Yellow, and as a feeding corn, a heavy yielder that shows a large percentage of grain to cob, we will put this beside anything in the state. We bought the original stock several years ago as a ninety-day corn, but this corn needs about one hundred and fifteen days to mature. The fodder is medium sized, the ears medium and heavy. We have never tested this corn on poor ground, but on rich ground it yields with the best. It can be moved safely to $42\frac{1}{2}$ degrees.



WING'S 115 DAY YELLOW

Our growers represent this corn as frequently yielding one hundred bushels per acre.

WING'S 110 DAY YELLOW—This variety is a twin with Wing's 115 Day Yellow. Very deep grained, although not quite as deep as the former. It will mature in about one hundred and fifteen days. Medium sized cob, somewhat larger than Wing's 115 Day Yellow, and medium sized fodder. This is a splendid, heavy yielding sort, and a good feeding variety. It is a variety which we originated ourselves, and judging from the way farmers like it, it seems likely to prove a leader before very long. We believe that it can safely be moved to latitude 42 degrees.



WING'S 110 DAY YELLOW

Soy Beans

Three years ago we ventured the assertion that Soy Beans were one of the coming crops. We are much more certain now than we were then. Today farmers everywhere are growing them as a matter of course, as we knew they would when they realized the splendid qualities of this plant. At that time we wrote as follows:



INSPECTING THE SOY BEANS TEST PLOTS

USEFULNESS OF SOY BEANS—If you will carefully study the statistics in our table of analyses, you will see why this crop deserves to take such prominence. It will then be seen that the beans have a higher protein content than oil meal, that the hay from them has a higher protein content than Alfalfa. Note also the splendid amount of fat in the grain. Note that the green fodder contains a higher protein content than either alsike or medium red clover. Add to this the fact that with the new varieties it is easily possible to secure two to three or occasionally as high as four or five tons of dry hay per acre; that from twenty to thirty bushels of seed per acre are frequently reported; that the plant is a legume and adds fertility to the soil fully as rapidly as the clovers or other legumes; that it will grow on soil too poor or acid for the easy success of Alfalfa; and you have a splendid combination, certainly qualities that are hard to excel with any of our cultivated crops.

We know of no plant having a wider or more useful range of possibilities than the Soy Bean. When one stops to think of the great feeding value of the grain, of the entire plant's being very valuable for forage, of its being a legume and a heavy gatherer of nitrogen to the soil, and that it is by no means difficult to grow nor exacting as to the kind of soil it requires, he is bound to realize that it occupies a position unique among all our crops. Not only is the grain as nourishing as oil meal, but it is as greedily eaten as corn, and as easily digested as any grain we have ever fed. Moreover, there seems to be a tonic effect

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about the entire plant, and stock fed either the grain or the forage become full of life and energy as with no other grain that we have ever used. As a hay plant it certainly deserves to compare very favorably with anything that we are now growing, especially so when the best of the new varieties are used. These are not only large enough to produce a great quantity of feed, but the stems are fine enough so that there would be less waste than with most of the old varieties. Also the habit of the new varieties is much superior to that of most of the old ones, the plants standing erect and being easily cultivated and easily harvested.

In habit the Soy Bean is very far superior to the cow pea, the latter being recumbent and difficult to cultivate and to harvest. As a nitrogen-gatherer we are sure the Soy Bean has no superior, when inoculated and where a crop to plow under is desired, nothing is better to add humus to the soil.

Its possibilities for silage have not been fully demonstrated, but it has been thoroughly tested in connection with corn, and in this way it makes as highly satisfactory a product as any that we know of, the beans greatly assisting to make a balanced ration. When all these facts are considered, and also that it will grow on either fertile or impoverished soils, either limestone or freestone, that while it is not quite a "lazy man's crop," it is not particularly difficult to handle, its high value will be fully realized.



**A FIELD OF PEKING SOYS JUST RIPENING. THIS LOOKS LIKE 30
BUSHELS PER ACRE**

Many times a meadow winter-kills, and we need a catch crop to supply additional hay. Millet has been largely used in the past for this purpose, but Soy Beans mature so quickly that they may be sown at the same time that you would sow millet, and the hay secured from them is so very much more valuable than millet hay, that there is no comparison between them. One hundred pounds of Soy Bean hay contain twice as much protein as the same quantity of millet hay.

Today we are as certain of the value of the crop as we ever were, and having grown them on from one hundred to one hundred and seventy-five acres during the past two years, we can state authoritatively their advantages as well as their weaknesses.

We find the plant to be just as valuable as we thought it was. Our experience

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also decidedly confirms what we have been telling our customers for some years: that there is a wide variation between different varieties of the beans, that some are much better adapted to different purposes than others, and that some are much better adapted to certain soils than others. Under our variety descriptions we fully state the characteristics of each variety which we are selling. We think it entirely possible that different varieties will thrive better in different parts of the country. One reason why we think this is that for several years we conducted experiments with different varieties which we secured ourselves from various parts of the country and also with some secured from the Government at Washington. Repeatedly, varieties which were particularly good in the Government tests were unsatisfactory with us. Occasionally a variety which the Government thought was moderately good has proven to be very valuable with us. Some varieties seem to be

real general purpose sorts, that thrive on a diversity of soils, giving satisfaction, to our knowledge, in various states. Our experience when growing the beans for grain is that poor ground is all right, that they will make a large yield of grain, although not always much forage. When grown for forage, we would select certain varieties, described later, and preferably put them on fairly good ground; in fact, the richer the ground, the more forage will be obtained. Certain varieties seem to make splendid yields on poor soils, while other varieties do not stand poor soil well.

As a forage crop we believe the soy bean will become decidedly popular, especially where clover meadows for any reason have failed, and a substitute for them is needed. The yield of hay from the soy bean should be nearly or quite equal to that of clover, and the chemical analysis shows the bean to be fully equal to the clover. The only disadvantage with the bean is that it is more difficult to cure than clover, and you cannot expect a second crop, as we do with clover. This second crop, however, can easily be supplied by mixing winter vetch with the soy beans when planting, as described in a later paragraph.

The photographs of Wing's Sable, Jet, Peking and Wilson, as shown in this catalogue, were taken primarily to show the character of these beans as a forage crop, and not as a grain crop. Note the fineness of the stems, the leafiness, and the erect habit of the plants, which makes them easily grown and harvested.

What will surprise the grower of soy beans as much as anything is the splendid value of the hulls and stalks after the grain has been threshed. Last year we fed a quantity of these hulls to the cows and sheep, giving at least one feed a day of the hulls and one feed of good clover hay. Both the cows and sheep preferred the hulls to the clover hay, and ate them and the stalks, dry and woody



SOY BEAN WING'S MIKADO

THE WING SEED CO., MECHANICSBURG, OHIO



SOY BEAN WING'S MIKADO

at time of planting, when the soil was like dust, until blooming time, ruined part of one field; planting too deep, about two or two and one-half inches, ruined part of a field, and part of a field was poor, owing to the fact that when fitting the ground was so dry and hard that we could pulverize the surface for only about one inch. Right beside this, on ground fitted after a shower, the soys did fully twice as well.

TIME OF PLANTING AND CULTIVATION—Soy Beans are not a lazy man's crop. Possibly, they require as much skill and patience as the potato crop. If our instructions are carried out, however, there is little need of even partial failure. Plow your land early in the spring, if possible, selecting soil that is not too foul with weeds. Prepare as for corn, giving frequent harrowings to kill the weeds as they appear. The ground should be a little warmer than for corn, and, therefore, we wait until immediately after corn planting time before seeding the beans, say about May 20th, although most of our varieties will mature seed in ordinary seasons if planted any time before June 20th.

We advise planting in drills about thirty inches apart, and one plant every two or three inches in the drill, which, we think, makes an ideal stand; as every seed will not produce a plant, it is wise to sow the seed a little closer than this. Nothing is gained by having the rows too close together or planting too close in the row, as they crowd each other like weeds.

as they seemed, fully as well as the clover, with as little waste. We were surprised ourselves at this, because the plants shed their leaves before ripening, and the threshed straw and pods do not look particularly palatable. After feeding in connection with hay for a few weeks, we allowed the cows to run to a stack of the bean straw, and our man noted an increase in the milk as soon as they made this change.

As a silage crop, as far as we know, they have not been thoroughly tested. We secured about ten tons per acre of silage from a small plot last year. We mixed this with equal parts silage corn and fed it with good results. Our test, however, was not large enough to be conclusive.

As to their weaknesses, some partial failures have shown us that there are two or three things that they cannot stand. Cold, dry weather



ITO SAN

Fully Ripe and Ready to Harvest

{THE WING SEED CO., MECHANICSBURG, OHIO}

To determine the advisability of planting soy beans solid for hay, we sowed two fields in this way the past season, and our experience leads us to believe that on very clean ground that is not likely to suffer from drought, this method, by saving cultivation, will be satisfactory, although we do not think that the yield of forage was much greater, or of better quality, than when seeded in drills and cultivated. On ground that is at all weedy, do not attempt to sow broadcast, as the weeds will surely choke the beans.

For planting we have been using a Black Hawk planter with bean plates, and a Superior grain drill, both with comparatively good results. We prefer the latter method, especially since it enables us to plant three rows at once, and to inoculate at the same time, putting our inoculating soil in the fertilizer box, stopping all but three of the outlets, and thus dropping what inoculation we want in the bottom of the furrows along with the beans, where it is immediately covered. This method reduces the amount of soil required to about thirty pounds per acre, and we secured the most perfect inoculation we ever saw by its use.



SOY BEAN WING'S SABLE

While, as stated, most of our varieties will ordinarily produce seed if planted up to June 20th, we advise planting as near May 20th, or June 1st as possible. If your soil is in nice condition, and the weather warm, they will come up quickly ahead of the weeds and before the ground has time to crust. If sown in cool weather, the ground is very likely to crust before they will come through. Some of the most successful growers run a weeder over the field almost immediately after planting. We believe this to be all right, provided caution is used not to use this machine after the plants have germinated, and when they are just ready to come through the ground. One year we ruined a field by using a weeder just as the plants were ready to come through, the machine breaking off many of the cotyledons. Just as soon as the plants appear above ground cultivation must begin, because it is important that the weeds be kept down while the plants are young. Cultivate as you would corn. We use a Buckeye pivot beam two-horse cultivator, which is by far the best machine for this purpose which we have ever seen. The plants need about as many cultivations as corn does, but the cultivations must be given while the plants are young. It is all right, in fact it is wise, about the second cultivation to throw quite a little earth to the row in order to smother the weeds. After the second cultivation, practice absolutely level cultivation, trying to leave the ground as little ridged as possible, not only for the good of the growing plants, but in order to make harvesting easier. As soon as buds appear, cultivation absolutely must cease. We do not even allow weeds to be pulled after this time.

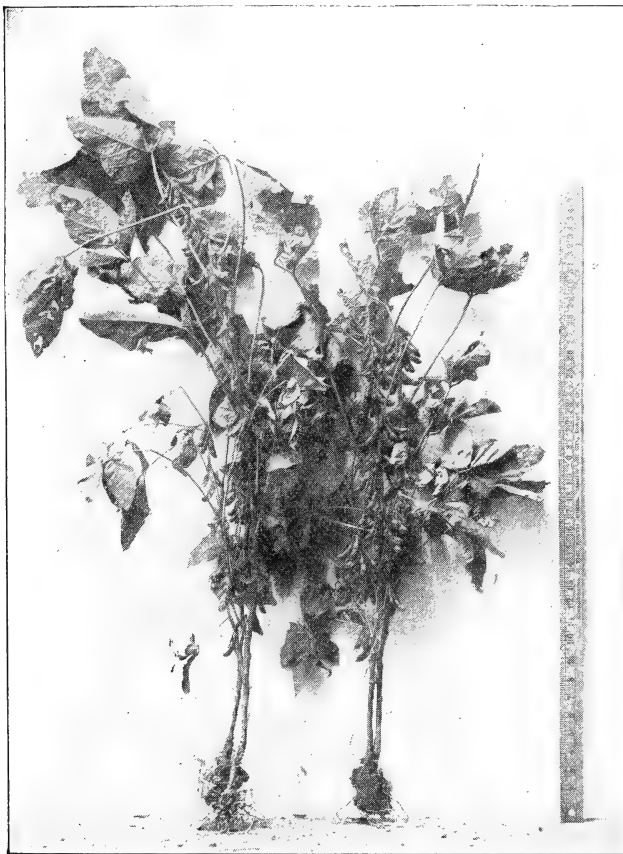
INOCULATION—Soy Beans usually, in fact nearly always, require inoculation. Growing them several years on the same ground does not even seem to get the inoculation. Unlike alfalfa, they will grow and even thrive apparently well enough without inoculation, and without developing any nodules. They will yield a good quantity either of forage or grain without inoculation, but they are certainly drawing their nitrogen from the soil when they do this, and for the good of the soil we simply must get their bacteria to them. It is also more than probable that without inoculation the analysis of the plants will be

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lower in protein than when they have inoculation, and that the yield of both grain and forage will be somewhat larger when inoculated than when not inoculated. Some farmers have the notion that soy beans do not benefit the soil like other legumes. This idea we think they have obtained almost entirely as the result of growing the beans without inoculation, our own experience being that they do bring the soil up remarkably. Soil from an old soy bean field is much more certain than any other method. Cultures may be obtained from the Department of Agriculture at Washington, but they are not certain. We have many requests for soil from our fields, and always refuse to sell this.

HARVESTING FOR GRAIN—When the beans begin to ripen, nearly all the leaves will fall. This year we had a splendid success by beginning to cut when the upper half of the stalks showed dry pods, the lower half of the pods being still green.

We used this year almost exclusively a McCormick self-rake, and we now believe that properly handled this is the ideal machine for harvesting them. It gathers them into bunches, dropping at the driver's will, and lays the bunches in the center where neither horses nor wheels can run over them; consequently there is no shattering. The only place that this machine will not work is on wet ground, or where the beans are very short, when they must be either mown with a mowing machine or pulled by hand. Harvesting at the stage we did ours this year, we could run the machine all day and cut about fifteen acres. We shock them immediately if they seem dry, or if quite green we let them stand about two days. We shock in small shocks, and let them stand about two weeks, when with favorable weather they will do either to thresh or put into barn or stack. When threshed for grain alone, an ordinary threshing machine with the concaves removed will do the work fairly well. This machine, however, will split a great many beans, and when desired for seed a regular bean thresher must be used.



SOY BEAN WING'S MONGOL

MAKING SOY BEAN HAY—September is the most satisfactory month for making soy bean hay. Begin cutting as soon as the dew is off the plants and continue the rest of the day. Let the plants lie in the swath until the leaves are well wilted, but rake them before the leaves become dry and brittle. They should be left in the windrows for a day or two, then put in small cocks. Three to six days of good weather are required for making soy bean hay. The hay when dry should be placed in good-sized stacks or under a shed. When stacked in the open field the hay should be protected by grass or canvas covers, as it does not shed rain well.

Each year convinces us more and more of the advantages of the best varieties. We have now tested out practically all of the new Government

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varieties as well as all of the old standard kinds, and we believe that we have retained all the varieties that will give the best results in the Corn Belt. Furthermore, we see positive results from our selections of high yielding strains of these best varieties. Wing's Extra Select Sable and Wing's Extra Select Peking both trace to extremely high yielding strains, and, we are certain, show superiority over the original stocks which we started with.

We believe that we are the largest retailers of soy beans in the United States. Possibly we retail as many as all the rest of the dealers put together. We believe, also, that we are spending more money to test varieties of these beans to ascertain which are the good ones, and to perfect them, by plant row breeding and selection, than any other firm in the United States. We think that we can see decided improvement in our varieties from the breeding work which we have done with them.



SOY BEAN WING'S SABLE

Wing's Mikado, Mongol, Sable, Extra Select Sable and Extra Select Peking varieties are our own, obtainable only directly from us. We have no agent, and no other seedsmen have them.

WING'S MIKADO—A splendid variety, a little better adapted to grain than hay, as the stalks and branches are a trifle coarse. On moderately good ground we think this variety will yield as heavily as any which we have as yet tested. It will also stand poor ground better than many other varieties, but succeeds best on moderately strong ground. The habit is splendid, plants perfectly erect, leafy, branching. Height two to three feet, will mature in one hundred and twenty to one hundred and twenty-five days. Sow about twenty pounds seed per acre. This bean has a record in test plot of thirty-seven bushels per acre, and in the field will make thirty bushels under favorable conditions.

WING'S MONGOL—A variety secured in 1908. This bean is very similar to Wing's Mikado, a remarkably heavy yielder of grain, the sturdy stalks making it more of a grain than forage variety. It prefers a moderately strong soil; on such soil it will yield as heavily as any variety which we have tested, but it will not stand really poor soil particularly well. It matures in about one hundred and fifteen days. Sow twenty pounds seed to the acre. We believe this bean will make thirty bushels to the acre under favorable conditions.

WING'S SABLE—A remarkable variety secured by us in 1908 and considerably improved by us since that time. It does practically as well for us on one kind of soil as on another, will yield well on poor soil and does splendidly on rich soil. The habit is perfect, plants perfectly erect, pods forming well off the ground, thus allowing easy harvesting, the branches and stalks when only a few

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inches above the ground becoming slender, making this bean admirably adapted to forage if desired. We believe it entirely practical to obtain a yield of thirty bushels per acre on a large acreage of this bean. It requires one hundred and twenty days to mature. Sow about fifteen pounds seed to the acre.

WING'S EXTRA SELECT SABLE—This stock is all grown from tested plants which made a high yield in test plots, and we think shows a good improvement over the original stock, fine as it was.

JET—Has a test plot record of thirty-two bushels per acre. A variety splendidly adapted to forage, and reasonably good for grain, requiring about the same soil as the Peking, that is, just moderately fertile. Habit is good, not quite so perfect as most of our other varieties. Matures in about one hundred and fifteen days. Requires about eighteen to twenty pounds seed to the acre.

PEKING—Up to this year, this variety has not stood poor ground as well for us as Wing's Sable, but this year there is no perceptible difference whatever, and our yield of Peking on poor soil, while not threshed as this catalogue goes to press, looks to be as heavy as any crop that we ever saw under field conditions, and we hope for a yield of thirty bushels per acre. It matures in about one hundred and fifteen days. Requires fifteen pounds seed per acre.

WING'S EXTRA SELECT PEKING—This seed comes from selected, very high yielding, individual plants tested out in test plot, as our Extra Select Sables were, and we think shows considerable improvement over the original stock. This stock includes seed from the highest yielding plant we ever saw; that is, 6 oz. for one individual plant.



SOY BEAN WILSON

WILSON—This variety in some ways excels all our others as a forage bean. On very rich soil we have seen it grow eight feet tall. The stalks and branches are slender, and on rich soil become somewhat vining at the tips. We think probably it would make a little the most hay, and a little the best quality, of any variety which we handle. Up to this year it has been an unsatisfactory grain producer, but this year did better, and it is possible that we are getting it acclimated. It stands poor soil about as well as any variety which we have tested, but when grown for forage we would put it on the best ground. Requires about fifteen to eighteen pounds seed per acre. Matures in about one hundred and twenty-five days.

ITO SAN—An old standard variety, one of the first and best sorts grown in the United States. Especially adapted to latitude $41\frac{1}{2}$ degrees, or north of that. A

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heavy yielder of grain, should make twenty bushels per acre, not particularly suitable for hay on account of not making as much of it as the other varieties we sell, but quality of hay would be all right. Would probably make one to one and one-half tons per acre. Habit not as good as with our other varieties. It will mature in about one hundred and five or one hundred and ten days. Sow twenty pounds seed to the acre.

MAMMOTH — The Mammoth Soy Bean will rarely mature seed north of the Ohio River, but we handle southern grown seed, as some of our customers desire it. This bean is satisfactory for ensilage, and all right to plow under. It would not be nearly so good as our Sable, Jet, Peking or Wilson for hay.

A STRAY SOY BEAN—A remarkable stray soy bean plant, illustrated in our last year's catalogue, variety unknown, volunteered in our trial ground last year. We put the seed away so carefully that we could not find it at planting time. Next year we shall sow it, and report results.



SOY BEAN PEKING

Clovers

Just a word about soil fertility. Scientists tell us that the only elements of plant food which we need to worry about are nitrogen, phosphorus and potash. The most expensive of these, the one which plants absolutely cannot do without, and the most difficult one to retain in the soil, is nitrogen. It costs fifteen to twenty cents per pound.

No matter how fertile our soils are, naturally it will be but a short time until we must renew, especially the nitrogen and phosphorus. The only practical way that we can renew the nitrogen is through the legumes, the most important ones of which today are, Alfalfa and Clover, Soy Beans, Cow Peas and Vetches. Each one of these has certain characteristics that make it particularly valuable; these characteristics will be described as we proceed. But what we wish to impress upon our readers is that permanent agriculture without the use of legumes is an impossibility; that each year the probabilities are that we will have to grow more of the legumes, and that a profitable rotation can be made to include two, three or even four of the legumes in a five-year rotation.

IMPORTANCE OF GOOD SEED—Red clover seed is often badly mixed with injurious weeds, such as buckhorn, plantain, dodder, etc. Great care should be exercised in purchasing clover seed, since life is too short to be spent in eradicating unnecessary weeds.

We handle an export grade of Red Clover, which we call our W. B. brand. It is of a quality so superior, that we are forced to ask a rather high price for it, but there are very few seedsmen handling anything as good as this is. Many of our customers have been surprised when they saw our seed, and they have stated to us that they have never seen any Clover Seed as good as ours.

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MEDIUM RED CLOVER—Biennial, 2 to 4 feet—This is the common or medium clover, the one most universally grown throughout the country. On fertile soil, and especially where hay is desired, it has only one superior, and that is Alfalfa.

MAMMOTH CLOVER—Biennial, 2 to 4 feet—For impoverished soils, or for pasturage, we think this variety excels the medium. On impoverished soils it does not grow too rank or coarse, and in a pasture it retains its greenness throughout the summer much better than the medium does, and also furnishes a larger amount of forage. It is also better adapted to fertilizing the soil than the medium, as it grows much ranker and coarser, making more to plow under. It is not nearly so valuable for hay when grown on fertile soil as the medium, because it is too large and coarse.

ALSIKE CLOVER—Biennial, 1 to 3 feet—This plant ranks nearly as valuable as the medium for ordinary soils, and in special conditions is much better. The plants are smaller, and ordinarily it produces a somewhat lighter crop than the medium, but as it is also much more closely eaten by stock, there is less waste. The quality of the hay is better. As the plant is a perennial while the medium is a biennial, it makes more of a permanent meadow or pasture plant. It succeeds on impoverished soil or acid soil better than the medium, and on wet soil it is invaluable. It will not, of course, grow in water, but will stand more moisture than the other clovers. It is fibrous-rooted, and will not heave out in winter.

WHITE CLOVER—Perennial, 4 to 9 inches—This is the common little running clover found in most good pastures. Its chemical analysis shows it to be

richer in protein than almost any other legume which we grow for forage. It is, of course, too small to grow for hay, but it is invaluable in all pastures, and no pasture mixture would be complete without it; in fact, we can thoroughly recommend discing old blue grass pastures and sowing a mixture largely composed of this clover to improve both quantity and quality of the pasture.

CRIMSON CLOVER—Annual, 1 to 3 feet—Throughout many sections of the country this plant has accomplished wonders, principally in building up poor soils. Its usefulness is mostly confined to its fertilizing value, as the hay is not very well relished by stock, although if cut green it makes a fair quality of hay. In the Atlantic and Southern states, its usefulness can hardly be overestimated, as it has redeemed thousands of impoverished fields at an extremely moderate expense. It is usually sown in the fall, allowed to come into bloom, which it does quite early in the summer, then either cut for hay, or plowed under, and another crop grown the same year. It could be sown in the spring, when it would mature a crop before fall.

MELILOTUS OR SWEET CLOVER—Annual or Biennial, height 1 to 9 feet—We are glad to note that farmers generally over the country are changing their



SOY BEAN JET

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views with regard to this plant. A few years ago it was usually regarded as a pest; then we found that it was a very valuable crop for fertilizer, and finally we have demonstrated without a chance for contradiction that it is a valuable pasture and hay crop, and thousands of farmers so regard it today. We are growing it ourselves on our own farms, and we see no good reason now why it should not take a strong position in permanent agriculture within a short time.

There are three species: the *Melilotus Alba*, *Melilotus Officinalis*, and *Melilotus Indica*. The *Alba* is the species most widely distributed and the most valuable one. On ordinary soils it grows six feet tall. Its blossom is white. It is biennial, the hardiest and sturdiest of the three varieties.

Melilotus Officinalis is biennial, has a yellow blossom, ordinarily grows about four feet tall. Both these varieties are used for hay or pasture, but the *Alba* is preferable, because stock will not bloat on it, while they sometimes will on the *Officinalis*. Also the *Alba* is a heavier producer both of forage and seed, and more certain than the *Officinalis*.

Melilotus Indica is annual, and has a yellow blossom. It ordinarily grows one to two feet tall. Its value is entirely as a fertilizer. We recommend its being seeded in corn at the last cultivation, allowed to stand all winter as a cover crop, and plowed under in the spring. The advantages of *Melilotus Indica* are, first, that the seed is inexpensive, second, that it makes a quick growth, thus being suitable for summer seeding, and third, that its stalks are slender, thus decaying rapidly and making its plant food quickly available for the next crop.

Now, just a word to the men who are still skeptical about the usefulness of *Melilotus* as a pasture or hay crop. Stock do have to learn to eat this plant, but turn them on it, if it is pastured, early in the spring when green stuff is just starting, and see how quickly they learn to eat it, and how greedily they eat it all the rest of the season. This is the way we do. Our stock keep it grazed right down to the ground, leaving rank blue grass close beside it, just as long as they can get a mouthful of the *Melilotus*. When you cut it for hay, do not let it get too ripe. We have had more experience with pasture than with hay, but we advise cutting for hay as soon as the blossoms appear.

SEEDING MELILOTUS—*Melilotus*, when once established, will grow on decidedly poor ground, in this respect being superior to alfalfa and other clovers, but it is a mistake to think that it is remarkably easy to establish a stand of it. We have had no trouble ourselves, but other farmers assure us that in some ways it is more difficult to get a stand than it is with alfalfa and other clovers. With our own experience, we have seeded either with oats or barley, which we cut for hay, or with a light seeding of oats and Canada peas, which we pasture off, and we have had no trouble with either method. There is one absolute necessity: *Melilotus* requires as much lime in the soil as alfalfa itself. It also very frequently requires inoculation. We have seeded both the first half of April and in August. The August seeding looks all right now, and if it does not winter-kill, we shall think that this late seeding is all right when desired. We use just about the same methods that we would in seeding alfalfa as to preparation of seed bed, amount of seed per acre, depth and manner of planting, nurse crops and fertilizers, and so far our experience indicates that the two plants are enough alike so that this is a good system.

SEED—Until the past year or so, it has been almost impossible to secure proper seed of *Melilotus*, but it is a trifle easier now. Originally this seed was gathered by very primitive methods. It was left unhulled. It frequently heated, and the unhulled seed containing quantities of immature seed showed very low germination. There is a great deal of unhulled seed sold now, but our experience with it has been such that we refuse to handle it at all. The hulled seed will usually give good results, although *Melilotus* naturally contains more hard seed which refuses to take up water, and which germinates three or four months or a year after being seeded, than any other legume that we know of. We advise using twenty pounds seed per acre, and using nothing but the hulled seed.

HARVESTING FOR HAY—The biennial varieties of *Melilotus* seeded in April should make one light cutting of hay the first year and probably two the second year, when it seeds. The rule with regard to cutting alfalfa, that of watching to see that the buds have started from the crowns, is even more appli-

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cable to Melilotus than to alfalfa. If you cut Melilotus for hay before the buds have started from the crown, you must cut it six or eight inches high, or else there is danger of killing the plants. If cut high, however, it can be harvested before the buds appear. Handle the hay about the same as alfalfa hay.

HARVESTING FOR SEED—Melilotus Alba occasionally yields as high as ten bushels of seed per acre, and we see no reason why it would not be extremely profitable to save it for seed. The method of harvesting for seed at present is about as follows: It is cut when the plant seems to have about the maximum amount of ripe seed it is likely to have. The plant is peculiar in that it will have at the same time, blossoms, green seed, ripe seed, and early matured seed which is falling off. It is cut with a self-binder and cured out in small shocks. It must be cut while the dew is on in the morning. One very successful grower threshes by first running the seed through a grain separator, which threshes it clean enough, but leaves it in the hull, and then running through a clover huller. We presume that his reason for this is that the heavy stalks may be a little difficult to feed through the clover huller. If left in the hull for any length of time, great care must be used that it does not heat.

MELILOTUS AS A FERTILIZING PLANT—Some of our customers have poor fields which are so thoroughly worn out as to become unprofitable, and they want a crop that will add fertility to these worn-out fields, with a minimum of labor. The Melilotus Alba is peculiarly well adapted to this purpose. Once established it will reseed itself, both roots and top in their decay adding nitrogen to the soil, and no attention need be paid to the field after the plants are once established until it is desired to plow it for some other crop. These worn-out fields must, of course, have enough lime, or else the Melilotus will not live. It would also be very wise to add liberal amounts of phosphorus, as the Melilotus cannot do this, and the application of phosphorus would also feed the Melilotus, producing a considerably larger crop than would otherwise be obtained. It is possible that the winter vetch could be seeded with the Melilotus, and that it would reseed itself, although our own experience with the vetch in reseeding itself has been decidedly disappointing.

BEST LEGUMES FOR FERTILIZING PURPOSES—Since we are very frequently asked what plant is best to sow for fertilizer, a word of explanation here might be in order. Crimson clover is hard to excel throughout the Atlantic or



WINTER VETCH
Harvesting for Hay. (Courtesy of the Practical Farmer.)

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Southern states. The seed is ordinarily very low-priced, the plant succeeds on very poor ground, adds much nitrogen or humus to the soil if plowed under, and fits into any rotation admirably, because it may be grown without seriously interfering with any other crop.

Winter Vetches are splendid winter cover, staying green all winter, coming on early in the spring, affording very early spring pasture, very early feed for soiling, or very early hay, the hay being comparable in quality with alfalfa itself, cutting one or two tons per acre. When inoculated, their roots are covered with nodules, and they will compare favorably with any other legume as nitrogen-gatherers.

Sweet clover has the advantage of inoculating the soil for Alfalfa, of making a ranker growth than the crimson, of seeding itself, and a very poor field may be left sown to it for any required length of time, becoming more fertile each year.

Mammoth clover has the advantage of being pretty good feed in addition to being a good fertilizer.

Cow peas belong to this same class, and, especially throughout the Southern states, it is hard to excel them. They are probably not quite as good feed as mammoth clover.

Soja Beans may be used in the same way, the principal advantage of their use being that they are better adapted to northern conditions than cow peas. They are also much easier cultivated and harvested.

In this connection we wish to say that it was formerly supposed that legumes secured all their nitrogen from the air, but now scientists believe that they secure not more than two-thirds of it from this source, the remainder from the soil. It was also formerly supposed that there was enough nitrogen added to the soil from the roots alone to maintain the land in a high state of fertility, but this is no longer believed either. Dr. Hopkins gives the following figures as the percentage of nitrogen which is in the roots of our ordinary legumes: Cow peas 6 per cent; Soy Beans 6½ per cent; Vetches 11 per cent; Crimson Clover, 6 per cent; Alfalfa 42 per cent; Red Clover 32 per cent; Melilotus 14 per cent.

It will thus be seen that it is necessary to plow these legumes under, tops and all, in order to obtain anything like their full fertilizing value.

One of the finest systems which we have ever seen for obtaining both a splendid crop and a soil restorer consists of sowing soy beans and winter vetch together in the spring. Twenty pounds of soy beans and about fifteen pounds of winter vetches are sown to the acre, mixed together in the drill box. Both should by all means be inoculated. The soy bean growing rather more quickly than the vetch, will be making full growth while the vetch is still rather small, and neither seems to particularly crowd the other. In the fall when the beans come off, the vetches will have made considerable growth, and soon after the beans are removed, the vetches will completely occupy the ground. The expense of this method is very small indeed, both for seed and labor, and you have the soy bean crop, which is very valuable, immediately followed by the winter vetch, which is also very valuable. Both these crops will afford you feed of the very highest quality, protect the soil from leaching throughout the winter, and plowing the vetch under will add nitrogen, certainly several times the cost of the seed. We have satisfactorily handled one hundred and seventy-five acres in this way this year, and strongly urge our customers to try it.

The disadvantages of these plants may be stated as follows: Crimson clover is only moderately good when cut for hay, it succeeds better in the South and in the Atlantic states than it does in the Corn Belt, where it frequently winter-kills. The only fault to find with mammoth clover is that the seed is usually a little higher priced than that of the other plants of this class. There is no objection to cow peas nor soja beans.

Vetches have high priced seed, and, especially in Northern states, require inoculation. They are recumbent, and need oats, barley, etc., to hold them up, if intended for hay.

THEORY OF MEADOW AND PASTURE MIXTURE—Mixtures are absolutely all right. Two grasses grown together will nearly always yield more than

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when they are grown separately. Three or more grasses will nearly always yield more than two grasses, or than when all are grown separately. Furthermore, two or more grasses grown together exhaust the soil less rapidly than one grass grown alone. Upon these principles rests the entire theory of all mixtures. For example, timothy and medium red clover grown together will make a larger yield than either one grown singly; the addition of red top will still more increase the yield; the addition of alsike will still further increase it, and improve the quality as well.

TEMPORARY MEADOW AND PASTURE MIXTURE—Meadows intended to be plowed up in three or four years' time will yield more and better feed when a mixture is used than when one grass is sown alone. The same theory applies to this that applies to all other mixtures.

If you care to avail yourself of our knowledge and experience in this matter, we will be glad to make special meadow mixtures for either moist or dry soils, for limestone or freestone soils, and to make mixtures containing either a preponderance of clover or a preponderance of timothy with some clover. We will make the same rule about this that we make about our other special work, and will decline to make special mixtures during our rush season (March).

PERMANENT MEADOW AND PASTURE MIXTURES—We make a specialty of meadow and pasture mixtures. This our practical knowledge of the subject enables us to do.

We have carefully studied all the grasses, and the clovers especially, for many years. We have studied them not only at home, but in all sections of the country. We feel entirely competent to make mixtures for any purpose, and have furnished them for a number of large estates in different parts of the United States.

We have some demand for permanent meadow mixtures, but have not handled these heretofore, because we thought the principle bad; that meadows should not be left in permanently; but where it is desired to cut for hay for one or two years and then turn into a pasture, as many farmers wish, the idea is all right, and this year we are preparing mixtures for this purpose. Our dry and moist permanent meadow mixtures are designed for this purpose. We do not sell or recommend any mixture which is expected to be cut for hay for more than two or three years at the outside. Alfalfa can be cut for more years than this, but no mixture with which we are familiar can be recommended for this purpose.

Upon request, and upon receiving careful description of your soil, we can vary these mixtures to meet special requirements, and are glad to do so without extra cost. However, if you want special mixtures, by all means give us your order before the rush season, because we have all that we can possibly do with our regular work at that time, and cannot possibly get out special mixtures.

DRY AND MOIST PASTURE MIXTURES—The expense of having this mixture amounts to little more than where you have only two or three kinds of grasses. For ourselves, we would never be contented to seed a pasture without having a large amount of clover added to the mixture. The several different varieties of clover are well adapted to this use, and not only do the stock thrive on them, but they enrich the soil at the same time and actually stimulate the other grasses. We prepare a dry pasture mixture and a moist pasture mixture. These mixtures both contain the proper amount of clover and also a large variety of the finest pasture grasses. We would recommend, however, that our customers either remix these mixtures upon arrival, or that they order the clover separate and mix it after the seed has been received. This is because in shipping the probabilities are that the clover will settle largely to the bottom of the sacks, and not be properly mixed upon arrival. Upon request we will make this mixture in any proportions which our customers desire and from any varieties of grasses found in our catalogue. If you desire any special mixture or any special proportions, write us before you are ready to order and we will estimate the cost. Where it is left to our judgment, we will use in the Dry Pasture Mixture the following varieties of seed:

Timothy, Medium Red Clover, Mammoth Clover, White Clover, Melilotus, Orchard Grass, Tall Meadow Oats, Tall Fescue, Creeping Fescue, Sheep's Fescue, Kentucky Blue Grass, Canada Blue Grass and Alfalfa.

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Moist Pasture Mixture: Timothy, White Clover, Alsike, Medium Red Clover, Mammoth Clover, Melilotus, Kentucky Blue Grass, English Rye Grass, Meadow Fescue, Sheep's Fescue, Tall Fescue, Red Top, Orchard Grass, Tall Meadow Oat Grass.

Meadow and Pasture Mixtures should be sown either the first half of April or in July. They must be sown on well prepared soil, and must be covered with a weeder, or some such tool.

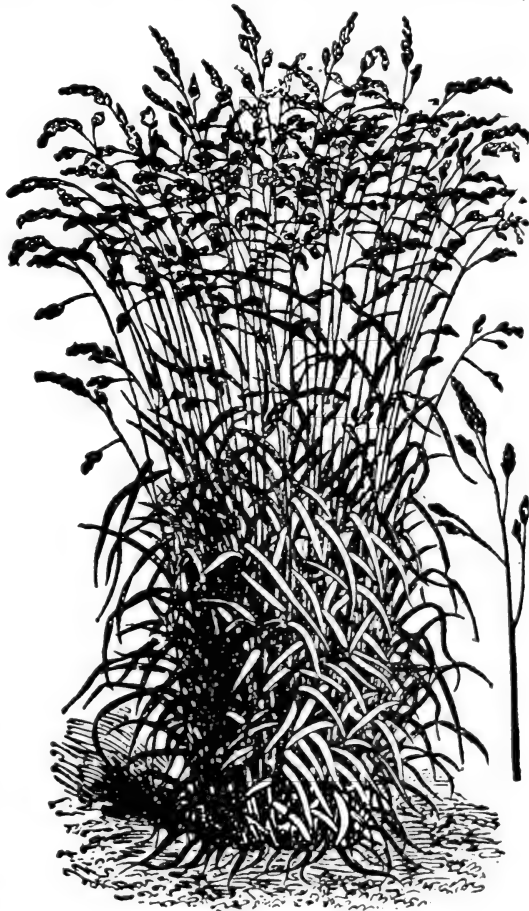
SPECIAL ADVICE—Our Mr. Joseph E. Wing has spent the greater part of his life in traveling, studying soils and plants under almost all conditions, not only in every state in the Union, but in foreign countries as well. He is familiar with the work that has been done at nearly all the Experiment Stations as well as that which has been done at Washington, and he certainly has had every opportunity to learn the whole agriculture scheme. Most of the year his time is fully occupied, but sometimes it is possible for him to make special trips to study conditions, give advice as to soil requirements, or suggest plantings of meadows and pastures. When his time permits, he is willing to do this for a reasonable compensation. As he has many requests for his time such visits can seldom be arranged without previous correspondence and due notice.

AWNLESS BROME GRASS OR BROMUS INERMIS—This is a very valuable grass, but present stocks on the market all contain quack grass, and we refuse to handle it until we can get pure seed. We have small stocks of pedigreed seed, which we will not sell, but will put out this year on contract with reliable farmers.

KENTUCKY BLUE GRASS—Perennial. Height 10 to 15 inches.—This is too well known to require description. We recommend sowing (if alone) about 40 pounds per acre.

This year we are selling both the Fancy Re-Cleaned Kentucky Blue Grass and the Blue Grass Strippings. It is a recognized scientific fact that unhulled grass seeds possess greater vitality than hulled ones. A friend who has had a great deal of experience with these grass strippings, advises us that he never has any trouble with the germination, and that he can always secure a more uniform stand than from hulled and cleaned seed. You will understand that these strippings include the stalk just as the plant is mown, but the most of the weight is actually with the seed. They require sowing by hand, and sometimes the bunches must be picked apart to prevent too much falling in one place. After scattering the seed, a weeder or light harrow should be run over them to cover lightly.

ORCHARD GRASS—Perennial, Height 12 to 30 inches—This grass is invaluable for pasture, but not very well suited for meadows. It will stand more abuse, hard tramping, poor soils and drought than any other grass which we handle. It starts early in the spring, and furnishes green pasture among the earliest of our grasses. In the middle of the summer a pasture of it should ordinarily be mown, as it tends to become woody,



ORCHARD GRASS



KENTUCKY BLUE GRASS

the season. If cut while in bloom it is a nutritious variety for hay, although it becomes woody later. Thrives best in soil that is not too dry. Sow (if alone) 60 to 70 pounds per acre.

RED TOP—Perennial. Height 1 to 2 feet—So well known as to hardly need description. It is often sown with timothy and red clover to make a heavier yield of hay. It prefers moist, rich soil on which it should reach a height of from two to two and one-half feet. It is also recommended in parts of the country as valuable grass for permanent pastures. Sow (if alone) about 40 pounds per acre.

TALL MEADOW FESCUE—Perennial. Height, 3 to 4 feet—A rather coarse grass, but very nutritious and productive, especially adapted to clay soils and shady woods. It is greatly relished by all stock when green, and is highly recommended for all permanent pasture mixtures. It also makes good hay. Sow (if alone) about 35 pounds per acre.

RED OR CREEPING FESCUE—Perennial. Height, 2 to 2½ feet—This grass is recommended on account of its ability to withstand drought. It roots deeply in the soil, and remains fresh and green when other grasses are apparently dried up. It yields a good bulk of herbage of fair quality. It is most nutritious at time of flowering. Sow (if alone) about 35 pounds per acre.

MEADOW FESCUE—Perennial. Height, 18 to 24 inches—One of the most highly recommended of our natural grasses. It is very nutritious and greedily eaten by all kinds of stock and very fattening. It makes good hay, succeeds well on many kinds of soil, although best on moist land. One of the earliest grasses to start in the spring, and one of the latest in fall. Sow (if alone) about 55 pounds per acre.

CANADA BLUE GRASS—Perennial. Height, 6 to 12 inches—Succeeds on soil too poor for Kentucky blue grass. It is well relished by stock, and especially recommended for cows. It should form a portion of the mixed grasses for permanent pastures in most parts of our country. Sow (if alone) about 40 pounds per acre.

SHEEP'S FESCUE—Perennial. Height, 6 to 20 inches—This grass is especially recommended for good upland or dry pastures, and for sheep grazing, being very much relished by them. It is slightly deficient in quantity of forage produced, but it is so nutritious as to counterbalance this deficiency. It is also recommended for lawn mixtures. Sow (if alone) about 30 pounds per acre.

TIMOTHY—So well known as to need neither description nor recommendation. We handle only the very best seed, an export grade sold by few other firms. It is generally best to sow it at wheat-seeding time. Spring seeding in this vicinity or this latitude is not so certain as the fall seeding.

and after mowing it will start up fresh and green, and make abundant fresh pasture. It also thrives exceptionally in shady places. It is nutritious feed, and properly handled will be readily eaten, although after it becomes woody, stock will usually prefer other grasses to it. Sow in the spring twenty to twenty-five pounds per acre in well prepared soil, covering lightly.

TALL MEADOW OAT GRASS—Perennial. Height 2 to 5 feet—A good grass either for meadow or pasture, splendidly adapted to poor soils, soils deficient in lime, and in general to soils throughout the Southern states, where it stands heat better than almost any other grass we have. It makes about as much hay as timothy, and of similar quality. Sow forty to fifty pounds seed per acre.

ENGLISH OR PERENNIAL RYE GRASS—Perennial. Height 15 to 24 inches—A valuable grass for permanent pastures, or for lawn mixtures. It produces an abundance of fine foliage, forms a compact sward, and remains bright and green throughout

THE WING SEED CO., MECHANICSBURG, OHIO

PRICE LIST OF BOOKS

We are agents for books and circulars on Alfalfa.

ALFALFA IN AMERICA—By Joseph E. Wing, 480 pages, cloth. Price \$2.00 postpaid. The most comprehensive, practical and valuable work on Alfalfa ever written. The writer has had much experience with the plant, growing it on his own farm and observing it in every state in which it can be grown. The book treats of the history, varieties and habits of Alfalfa, describes the conditions required by the plant and how to produce them where they do not exist naturally, tells how to prepare the soil, how to sow, care for and harvest the plant, the proper tools to use, how to erect suitable buildings for storing the hay. It describes the enemies of Alfalfa and how to combat them and discusses the soil in its relation to Alfalfa, its different constituents, and what fertilizers to use.

MEADOWS AND PASTURES—By Joseph E. Wing, 418 pages, cloth. Price \$1.50 postpaid. Describes the best methods of making and maintaining meadows and pastures. Contains full descriptions and illustrations of all the agricultural grasses, with directions for planting and caring for them when established. Profusely illustrated and beautifully printed.

FEEDS AND FEEDING—By W. A. Henry, 613 pages, cloth. New edition just out. Price \$2.25 postpaid. This book is a cyclopedia of animal nutrition and rational feeding of farm animals. It shows how plants grow and elaborate food for animals, the functions of different nutrients, the production of flesh, fat and energy, how to calculate rations for farm animals. It gives the food values of the different feeding stuffs, the grains and grasses, mill and factory by-products. It sets forth the results of the tests of American and European Experiment Stations in feeding farm animals. In this connection a great many tables are given, showing the amount of food consumed in one day by the animals in the test, the product of the day's food in work, flesh, energy, etc. It is cross-indexed in such a manner that any fact stated in the text may be readily found. This book should be in the library of every up-to-date farmer.

ALFALFA—By F. D. Coburn, 160 pages, cloth. Price, postpaid, 50c. Table of contents includes chapters devoted to history, description, botanical position, varieties, length of life, habits of growth, penetrating of alfalfa roots, climate and soil, food for alfalfa, seed bed and preparation, time of seeding, quantity and quality of seed, method of seeding, nurse crop, treatment of young alfalfa, alfalfa for soiling, harvesting, comparison of yields, scientific feeding, alfalfa vs. corn, alfalfa for dairy cows, for swine, for horses, for sheep, as a honey plant, making a balanced ration, alfalfa in rotation, Turkestan alfalfa, alfalfa culture and insect life, disking and harrowing, enemies and friends of alfalfa in different states.

ALFALFA—By F. D. Coburn. Over 400 pages. Fifty-eight photographs. Price, \$2.00, postpaid. This book covers the same ground as the smaller one by the same author. It is, however, amplified, going into detail, and is very valuable work on the most important subject.

THE STORY OF THE SOIL—By C. G. Hopkins, 350 pages, cloth. Price, \$1.62 postpaid. Dr. Hopkins, in giving us this book, has done inestimable good to permanent agriculture. This book gives simply, clearly, and with remarkable logic, fundamental principles, and theories which must be understood and applied to every soil in the country. It covers the entire ground, giving full scientific reasons for every deduction, but giving them in such a clear and easily comprehended form, that anyone can understand it. We advise every farmer who has the least intention of maintaining his soil's fertility to buy this book and read it. It is in narrative form, and the story itself would carry one along with it, even without the remarkable teachings contained in it.

We would also recommend to every one who is interested in growing alfalfa to write to the Ohio Agricultural Station at Wooster, Ohio, for their Bulletin No. 181, on Alfalfa.

The Kansas Experiment Station at Manhattan, Kansas, has a very valuable bulletin on Alfalfa. Write them for Bulletin 155.

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MILLETS

JAPANESE MILLET—A tall growing and enormous yielding variety. It is sometimes 6 to 8 feet high. Does not lodge and sometimes yields from 10 to 12 tons of green fodder per acre. When properly cured it makes excellent hay. It is recommended that this variety be sown on good rich soil, and only in the Northern states, as it does not thrive south of the Ohio River. If sown early in May and cut when in bloom it will produce a fair second cutting. May be sown from the middle of May to the first of July. Broadcast, 15 pounds per acre, but it is better to sow in drills, 12 to 14 inches apart, using 10 to 12 pounds per acre, and hoeing between the rows to keep down the weeds until the plant is a foot high or over, after which time it will smother all weeds out itself.

HUNGARIAN MILLET—It is the quickest maturing of any variety of millet. May be sown any time during the summer up to the middle of August, thus being very valuable to substitute where another crop has failed. Sow about 48 pounds per acre.

GERMAN OR GOLDEN MILLET—Tennessee Grown—This stock is much preferred to the same seed Western-grown. Will grow in any climate or soil, and make a large yield of nutritious feed. Should be sown at the rate of 50 pounds or over per acre, any time between May 1st and June 15th; cover lightly. Cut in bloom before the seed hardens.

Hungarian millet is the quickest maturing, German next, and Japanese last. Hungarian has the finest stalks, German next, Japanese the coarsest. Probably the German and Jap would yield a little more forage than the Hungarian, but not of quite such good quality.

Vetches

The vetches are suitable for cover crop, for hay or for pasture. They are annuals, and in this latitude the spring vetch, *Vicia Sativa*, winter-kills. As a hay crop, the winter vetch, *Vicia Villosa*, is said to make about one and a half tons per acre, which hay in chemical analysis is a little richer than alfalfa itself. The winter vetch can be used as a catch crop for seeding during the middle of the summer and removing for hay the following spring with excellent results, and it is so used in the Southern states, where it is better known than in the North. When used for hay it must have a grain crop to support it, and rye in the fall, oats or barley in the spring, are generally used for this purpose. It may also be used as a very early spring pasture, either when seeded alone or seeded with rye. It stays green all winter and comes on quite early in the spring. As a cover crop we question if any other plant which has been tested out in the Corn Belt equals it. It is a splendid nitrogen gatherer, it prevents leaching out or washing both by its roots and by its branches which naturally lie recumbent, and when plowed under its high nitrogen content makes it very valuable for adding plant food to



WINTER VETCH

{THE WING SEED CO., MECHANICSBURG, OHIO}

the soil. The Delaware Experiment Station reports an average crop of vetch as containing one hundred pounds nitrogen per acre; this would be worth if purchased in commercial form from \$15.00 to \$20.00. It is true that the seed is expensive at present, this owing to the fact that it is all imported, American farmers as yet not having taken much interest in their own seed, but even with present prices of seed an acre may be sowed down solid for about \$6.00. An average crop of winter vetch plowed under will furnish a little more nitrogen than a hundred bushel corn crop following it would remove. If we can buy this nitrogen through the use of this legume for even \$6.00 when it would cost \$15.00 to \$20.00 in commercial form, it looks like a certainty that it would pay to use this plant to plow under even if the seed were high priced.

Winter vetch with us has produced somewhat more forage per plant than spring vetch, although the latter does quite well. Both the vetches absolutely must have inoculation, but it is now known that the common garden pea has the same bacteria as the vetch, therefore the inoculation of moderate acreages, using the soil from your gardens, would be a very simple matter.

WINTER VETCH, VICIA VILLOSA—HAIRY OR SAND VETCH—This variety is best adapted to cover crops in the Northern states, where it does not winter-kill. If grown for hay, it should be sown with rye to hold it up off the ground, or if pastured, the rye is still used. We advise using forty-five pounds winter vetch seed per acre, and about one bushel rye, sown about the middle of the summer at the last cultivation of corn, and from then on, preferably not later than September 10th. Winter vetch and soy beans grow together admirably. For instructions on this point see page 33.

SPRING VETCH, VICIA SATIVA, COMMON, SMOOTH or OREGON VETCH—This variety should not be sown in the fall in this latitude, as it winter-kills. It is a valuable plant for spring seeding, preferably in connection with one of the spring grains, or Canada field peas, oats and spring vetches make an excellent combination. Spring vetches must be inoculated as the winter vetches are. They have made a smaller quantity of forage for us than the winter vetch, but of excellent quality. The seed is inexpensive, and we would advise our customers to give this plant a more careful test than they have been doing, believing it to be useful. Sow, if alone, sixty to seventy-five pounds per acre; with oats



WINTER VETCH
Plants in Full Bloom. (Courtesy of the Practical Farmer.)

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sixty pounds vetches and one bushel oats; with oats and Canada peas forty-five pounds vetches, one bushel oats, and one bushel Canada peas. Seeding should be done early in the spring, as early as it is practical to seed oats.

True Dwarf Essex Rape

This is a plant which is coming into such prominence that description or recommendation is really unnecessary. It is of the cabbage family, and in feeding the same results may be expected as would be from feeding cabbage, but at a fraction of the cost of growing. Nearly all shepherds who exhibit at fairs expect to make a large part of their gains from this plant. It produces an enormous amount of forage per acre, which may be fed with absolute safety to sheep, hogs or cattle. At the Michigan Experiment Station 128 lambs pastured on 15 acres of rape showed a total gain of 2,890 pounds during 8 weeks, which is 3 pounds per lamb per week. Our seed is the True Dwarf Essex, and not the worthless annual. Sow 4 pounds per acre broadcast, or 2 to 3 pounds if in drills.

Wing's Selected Grains

SEED OATS

We give below the eight-year average yield of twenty-one varieties of oats as tested by the Ohio Experiment Station. Note that three of the highest yields are those of the Siberian, Sixty Day and Improved American. This year we are fortunate to have moderate stocks of all three of these oats.

The Improved American oat has given our customers satisfaction over a little wider territory than most any other variety which we have ever sold. We can recommend this oat as a splendid general purpose variety, adapting itself to various soils and conditions. It is a strong grower, rather tall, very vigorous and sturdy, and a very heavy yielder.

The Siberian continues to hold a very high record for this state. It has not given quite as good satisfaction in adjoining states as it has in Ohio.

The Sixty Day oat grows smaller than our other varieties, and ripens about one week earlier, generally getting in ahead of the rust. It is giving satisfaction over a very wide territory, as wide as any oat used in the United States.

This year we are putting our oats on the bargain counter, because we believe that these splendid varieties have not been properly appreciated by farmers in the past, and we are making the price so low that no one can afford to lose this opportunity of testing these oats.

Ohio Agricultural Experiment Station

EXPERIMENTS WITH OATS AT WOOSTER, OHIO.

Eight-year average yield of twenty-one varieties of oats—1904-1911.

Variety	Side or branching	Color of grain	Bushels per acre
Alaska	Branching	White	61.69
American Banner	Branching	White	66.80
Big Four	Branching	White	69.29
Clydesdale	Branching	White	59.94
Czar of Russia	Branching	White	66.59
Early Champion	Branching	White	60.37
Golden Fleece	Branching	White	61.46
Green Mountain	Branching	White	65.67
Improved America	Branching	White	68.47
Joanette	Branching	Black	65.55
Lincoln	Branching	White	65.74
Long's White Tartar	Side	White	64.30
Morgan Feller	Branching	White	64.59
Seizure	Side	Yellow	60.46
Siberian	Branching	W. & Y.	70.95
Silver Mine	Branching	White	68.60
Sixty Day	Branching	Yellow	67.59
Swedish Select	Branching	White	61.38
Twentieth Century	Branching	White	61.47
Welcome	Branching	White	61.94
Wideawake	Branching	White	58.83

THE WING SEED CO., MECHANICSBURG, OHIO

THE RELATION OF SEEDING TO THE YIELD OF GRAIN.
Twelve-year average of four varieties.

4 pecks	5 pecks	6 pecks	7 pecks	8 pecks	9 pecks	10 pecks	11 pecks
43.18	46.26	46.58	47.58	48.25	50.09	49.72	50.67

Barley

CHAMPION BEARDLESS—We are pioneers in growing beardless barley in Ohio. Somewhere we read that it was a valuable nurse crop for meadows, and also that it was invaluable feed for farm animals. We began growing it nearly fifteen years ago, and were so well pleased with it from the beginning that we have used it almost exclusively for a nurse crop on our farm ever since our first experiment. It has short, very stiff straw and little foliage, and ripens only a little later than wheat, coming off the ground before the young meadow has begun to suffer at all. If sown as recommended it forms so little shade as to injure meadows none whatever, and as it does not stool as much as oats and very rarely lodges, it practically never smothers the young meadow under it. If cut when in milk it makes a large amount of very valuable hay greedily eaten by all kinds of stock. If cut for grain the straw may be fed with safety owing to its being beardless, and the grain is very rich, good feed. We had splendid results from it when fed to sheep. If fed to hogs it must be either soaked or ground, and should be mixed with oil meal, tankage or other feed to form a balanced ration. Sheep like it so well that it must be fed with caution until they are accustomed to it, but after this time is reached it may be fed liberally, and will give as good results as any grain with which we are familiar. Our Champion variety is the heaviest yielding variety known, and at the same time forms a very excellent nurse crop. It should be sown at the rate of about three to five pecks per acre for nurse crop, and for grain about two bushels per acre. Sow at oat seeding time.

COMPARISON BETWEEN BEARDED AND BEARDLESS BARLEY—Beardless barley is chiefly valuable as a nurse crop; for grain it is uncertain. It usually yields from twelve to thirty bushels per acre, sometimes forty to fifty bushels. Bearded barley should yield more uniformly and at a rate of from thirty to fifty bushels per acre. South of the Ohio River, bearded barley may be sown in the fall; but north of this, we can recommend nothing but spring sowing.

ODERBRUCKER BEARDED BARLEY—This variety has been a sensation in the Northwest, sometimes outyielding all other varieties many bushels per acre. Our stocks come from reliable sources in the Northwest, and we believe will please all who try them.

RYE—A valuable crop for soiling, green fodder, straw or grain. It is largely used by farmers to seed in the fall, and pasture early in the spring. Our stock is Northern-grown, and will unquestionably give good results wherever sown.

WINTER RYE—Winter rye is also a very good nurse crop for alfalfa or clover. It should be sown in the spring at oat seeding time, about one bushel per acre. It will grow six to twelve inches tall and die. It takes the place of the weeds early in the spring, dies before the young meadow has been overshadowed, and forms a mulch throughout the rest of the summer. We can recommend this plant as a nurse crop, but we do not like it so well as beardless barley. Do not use spring rye for this purpose, as it will form grain, and be no better probably than oats.

BUCKWHEAT—Our stocks are the best which we can obtain on market. We handle on a small commission and our prices will be found to be on the market at all times.

SORGHUM—Grown both for syrup and for forage. Three to five pounds per acre is recommended for syrup. When fodder is desired, ten to fifteen pounds is the right amount of seed. When desired for hay, not less than seventy-five pounds seed should be sown per acre. It then makes very large amounts of hay, the feeding value of which is about that of corn stover. It is dangerous to pasture sorghum, but it is said to be perfectly safe when cured into hay.

THE WING SEED CO., MECHANICSBURG, OHIO

Seed Wheat

We give below results of the Ohio Experiment Station's long time test with twenty-four varieties of seed wheat. For some years we have been especially recommending the Gypsy, and this test certainly should be convincing proof of the splendid yielding qualities of this variety. Our stocks of Gypsy are descended from wheat secured from the Experiment Station itself.

Last year we sold large amounts of Gypsy wheat, and the reports received from our customers are so enthusiastic over this breed that we feel safe in recommending it to our customers as the very best bearded variety grown in this state, enough better than the others so that in future we expect to handle this one variety alone. Gypsy wheat goes through the winter almost like rye, seeming to fairly rejoice in the cold, coming out in the spring in the very best heart possible. It has a large amount of straw, but of such splendid quality, so little given to lodging, that we can cheerfully recommend it for fertile soils, on which almost any other variety of wheat would lodge. Our own neighborhood contains as fertile soil as is in the state, and we grow this wheat with entire success on the best land which we have. The field from which we obtained our stocks in 1910 produced at the rate of twenty-seven bushels per acre of Gypsy wheat, while another variety which is usually thought well of in this section, the Goenz wheat, grown alongside of it under identical conditions, made less than twenty. Reports from our customers everywhere that we have sold this wheat indicated the best of satisfaction with it.

In 1911, one field of Gypsy wheat grown by a neighbor from our seed, yielded forty bushels per acre.

POOLE WHEAT—We are sure that Poole wheat is the best all-round smooth wheat grown in the state, and we are this year growing a field for seed purposes. Poole wheat has been giving good satisfaction for many years, and our customers will hardly need an introduction to it. Our stocks are descended from Experiment Station seed, and we are sure they will give the best of satisfaction.

Ohio Agricultural Experiment Station

RESULTS OF EXPERIMENTS WITH WHEAT AT WOOSTER.

Fourteen-year average yield of twenty-four varieties, 1898-1911

Variety	Bearded or Bald	Color		Bushels per acre
		Grain	Chaff	
American Bronze	Bald	Red	White	28.05
Buda Pesth	Bearded	Red	White	29.83
Dawson's Golden Chaff.	Bald	White	Red	31.94
Deitz	Bearded	Red	White	30.01
Early Red Clawson....	Bald	Red	Red	28.87
Early Ripe	Bald	Red	Red	29.96
Fulcaster	Bearded	Red	White	29.65
Fultz	Bald	Red	White	29.34
Fultz-Mediterranean...	Bald	Red	White	29.08
Gold Coin	Bald	White	Red	29.96
Gypsy	Bearded	Red	White	31.71
Harvest King	Bald	Red	Red	30.76
Hickman	Bald	Red	White	29.39
Mealy	Bald	Red	White	30.64
Mediterranean	Bearded	Red	Red	29.76
Nigger	Bearded	Red	White	31.43
Nixon	Bald	Red	White	29.75
Perfection	Bald	Red	Red	31.27
Poole	Bald	Red	Red	31.79
Red Wonder	Bearded	Red	White	28.67
Rudy	Bearded	Red	White	29.07
Turkey Red	Bearded	Red	White	24.09
Valley	Bearded	Red	White	31.31
Velvet Chaff	Bearded	Red	Red	26.78

THE WING SEED CO., MECHANICSBURG, OHIO

Early and late seeding test with wheat.
Average for ten years.

	Bus. per acre
Drilled September 1.....	28.04
Drilled September 8.....	30.02
Drilled September 15.....	32.35
Drilled September 22.....	33.96
Drilled September 29.....	32.89
Drilled October 6.....	27.54
Drilled October 13.....	25.78
Drilled October 20.....	18.92
Drilled October 27.....	15.09

Thick and thin seeding test with wheat.
Average for fourteen years. Eight different varieties used.

	Bus. per acre
Three pecks per acre.....	23.69
Four pecks per acre.....	25.00
Five pecks per acre.....	25.67
Six pecks per acre.....	26.68
Seven pecks per acre.....	26.87
Eight pecks per acre.....	27.77
Nine pecks per acre.....	27.98
Ten pecks per acre.....	27.54

Canada Field Peas

This plant should rightfully assume greater importance than it has at present. Many of our best farmers know and understand this, but very many do not. It is used both as green feed and as fertilizer; and in both places it deserves to occupy a very prominent position. As green feed sown with oats or barley early in the spring, it fills a place which no other plant we have can occupy. The amount of feed produced on an acre is very large. It comes before any other good nutritious feed suitable for hay or soiling. It is greedily eaten by practically all kinds of stock, and is as nourishing as can be desired. As a fertilizer, either when plowed under or pastured off, it will rank very high. Some of our very best farmers sow each year a field which they wish to enrich to Canada peas and oats, hogging off the crop or depasturing with cattle or sheep, and they say that they can tell the line right to the foot where these peas grew, when they plow the field up and put in another crop. We would earnestly urge our customers to use these peas more liberally than many of them have been doing in the past, knowing that they will be very well pleased with the result.

Canada peas are cold weather plants, and the earlier they are seeded, the better they will do. Many of our customers seed in March, most of them, however, the first of April. If the season is cold, they may be sown later than this, but always get them in as early as possible. The very best results would probably be obtained by seeding the peas and oats separately, and planting the peas at a greater depth than the oats. Where this is not practical sow on well prepared soil, one to two bushels Canada peas with one bushel oats per acre, and sow as deep as you dare to without causing the oats to rot.

Cow Peas

These have a dual purpose, and wherever they are needed they are indispensable to the successful farming of the country. They will grow on soil so poor or impoverished that it is nearly impossible to grow any other farm crop. If one or two crops of them are grown and turned under for fertilizer, this same soil will then produce fair crops of every sort. In the South they are very extensively grown also for hay, being called the "clover" of the South. They are legumes, and gather nitrogen from the air to add to the soil. We strongly recommend growing a crop of these preparatory to attempting alfalfa, even on moderately fertile land. Sow in May or June, or after corn planting, from one-half to one bushel per acre, if drilled; about two bushels per acre if broadcasted.

Fertilizers

The greatest soil experts are agreed upon most points with regard to maintaining or increasing the fertility of our soils. Our Corn Belt soils are comparatively virgin, and they have yielded splendidly up until the present time, the crops drawing on stored fertility, but this course cannot be followed indefinitely without disaster. When we realize the fact that in fifty years from now it will be necessary to feed twice as many people as we do today, and that practically no more land will be farmed than there is now, it may be readily seen that we must increase the soil's store of food rather than diminish it. For the most part, the soils are liberally supplied with potash, although some Experiment Stations' reports show increased yields already from applications of moderate



I USED BASIC SLAG ON THIS FIELD!

amounts of potash. Repeated experiments from all over the Corn Belt, in fact from practically every state east of the Rocky Mountains, indicate that the available phosphorus in the soil today is not sufficient for maximum crops. Further experiments over practically this same great territory indicate that replenishment of nitrogen is becoming increasingly necessary. Potash is already present in most soils in great quantities, but much of it is not readily available. The use of manure or plowing under clover crops, in fact any decaying vegetable matter, tends to liberate potash, which is in insoluble form. Nitrogen must either be purchased at a very high cost at present, 15 or 20 cents per pound, or else secured from the air through the use of legumes. Furthermore, it is no longer believed that simply growing the legumes in a rotation will add enough nitrogen to the soil to do much good, unless the legume is either plowed under or fed and the manure carefully saved and returned to this soil. Phosphorus simply must be purchased. The reason for this is that even when all the crops are fed on the farm, phosphorus is required to form bone and tissue, and the farm animals are mostly shipped to market, taking large stores of phosphorus with them. Furthermore, phosphorus is an inexpensive fertilizer.

There are four principal forms of phosphorus on the market today. The cheapest one is known as raw rock phosphate. This is simply the phosphate rock finely ground and untreated in any way. A pound of phosphorus of this nature costs only about one-fourth as much as a pound of phosphorus in acid phosphate, but the profitable use of the raw rock phosphate absolutely requires either that it be used in connection with liberal quantities of barnyard manure, or plowed under with a green manure crop; in either of these cases, the decaying vegetable matter attacks the rock, making its phosphorus available. If applied to the surface of the ground, or where it does not come into contact with decaying vegetable matter, raw rock phosphate will do almost no good whatever. Acid phosphate is raw rock, to every ton of which is added approximately a ton of

THE WING SEED CO., MECHANICSBURG, OHIO

sulphuric acid. This material is very widely used and gives good results, with the exception that the application of so much acid to soils is of questionable wisdom. Bone meal usually contains large amounts of phosphorus, and it forms a good carrier. The one possible objection to it is that it usually has some nitrogen for which we have to pay regular nitrogen prices, and this nitrogen is in a rather unavailable form, being quite largely gristle, which decays slowly.

Thomas Phosphate Powder, or basic slag, costs almost exactly as much per unit of phosphorus, as does the phosphorus in bone meal or in acid phosphate. The phosphorus in this material is as quickly available as that in either acid phosphate or bone meal, and in addition this fertilizer carries 35 to 50 per cent. lime, which we ourselves prefer to add to the soil rather than that much acid in acid phosphate.

WHERE TO OBTAIN PHOSPHORUS—The maintenance of soil fertility and permanent agriculture requires in some cases the addition of moderate amounts of potash: in most cases the plowing under of liberal quantities of barnyard manure or of leguminous crops used as green manure; and finally, liberal applications of phosphorus.

We have established connections with one of the largest and best manufacturers of raw rock phosphate, and can supply this to our customers, when desired, at moderate prices. Guaranteed analysis $12\frac{1}{2}$ per cent. phosphorus, fineness guaranteed to equal that of any other manufacturers in the United States. We advise shipping this in paper lined cars in bulk, and not sacked. A minimum carload contains 22.4 tons.

We have also established connections with one of the largest importers, handling the highest grade of basic slag that is produced anywhere, the Key Tree Brand Thomas Phosphate Powder, and we can furnish this to our customers in car lots or less than car lots at moderate prices.

Prices on Key Tree Brand Thomas Phosphate Powder are as follows: Car lots f. o. b. Baltimore, Md., \$15.50 per ton; less than car lots f. o. b. Mechanicsburg, Ohio, \$20.00 per ton; in 200-lb. bags. The minimum weight of a car of Key Tree Brand Thomas Phosphate Powder is 15 tons.

We advise using from 300 to 1,000 pounds basic slag per acre. It does not leach, and what is left over will be right there ready for the next crop. Our basic slag is guaranteed to analyze 16 to 19 per cent. phosphoric acid, 35 to 50 per cent. lime, 5 to 6 per cent. magnesia.

We handle best grade **BONE MEAL**, and will ship either from our warehouse or from Cleveland, Ohio. Prices quoted on application.



WHY DIDN'T I USE IT ON THIS FIELD?

THE WING SEED CO., MECHANICSBURG, OHIO

Analysis of American Feeding Stuffs

FRESH OR AIR DRY SUBSTANCE

	Water %	Protein %	Fat %	Carbo- hydrates %	Fiber %	Ash %
HAY and DRY, COARSE FODDER						
Legumes						
Alfalfa, 1	8.4	14.3	2.2	42.7	25.0	7.4
Clover, medium, 1	20.8	12.4	4.5	33.8	21.9	6.6
Clover, alsike, 1	9.7	12.8	2.9	40.7	25.6	8.3
Clover, mammoth, 2	21.2	10.7	3.9	33.6	24.5	6.1
Clover, white, 1	9.7	15.7	2.9	39.3	24.1	8.3
Clover, crimson, 1	9.6	15.2	2.8	36.6	27.2	8.6
Soy Beans, average, 1	11.3	15.4	5.2	38.6	22.3	7.2
Soy Bean Straw, 2	10.1	4.6	1.7	37.4	40.4	5.8
Cow pea, 1	10.7	16.6	2.9	42.2	20.1	7.5
Vetches, 1	11.3	17.0	2.3	36.1	25.4	7.9
Other Forage Plants						
Barley, cut in milk, 2	15.0	8.8	2.4	44.9	24.7	4.2
Oats, cut in milk, 2	15.0	9.3	2.3	39.0	29.2	5.2
Canada Blue Grass, 3	14.3	7.6	3.2	50.1	17.9	6.7
Tall Meadow Oat Grass, 3	14.3	10.8	2.4	42.8	24.3	7.2
Timothy, cut soon after bloom, 1	14.2	5.7	3.0	44.6	28.1	4.4
Perennial rye grass, 2	14.0	10.1	2.1	40.5	25.4	7.9
Kentucky blue grass, cut with seed in milk, 1	24.4	6.3	3.6	34.2	24.5	7.0
Meadow fescue, 1	20.0	7.0	2.7	38.4	25.9	6.8
Orchard grass, 1	9.9	8.1	2.6	41.0	32.4	6.0
Red top, cut in bloom, 1	8.7	8.0	2.1	46.4	29.9	4.9
Sheep's fescue, 3	14.3	5.6	3.6			4.3
German millet, 3	7.6	7.4	2.1	49.0	27.7	5.9
Hungarian millet, 3	7.6	7.4	2.1	49.0	27.7	5.9
Pearl millet, 3	8.1	7.4	0.8	45.6	31.5	6.5
Bromus Inermis, 5	25.4	6.0	1.8			
GREEN FODDER						
Legumes						
Alfalfa, in bloom, 3	70.1	5.0	0.8	15.3	6.6	2.0
Clover, medium, in bloom, 3	72.7	4.3	0.9	13.4	6.5	2.2
Clover, alsike, in bloom, 3	74.7	3.8	0.9	11.1	7.3	1.9
Clover, white, in bloom, 3	78.2	4.4	1.4	9.4	4.7	1.7
Clover, sweet, in bloom, 3	76.5	2.7	0.4	12.0	6.5	1.6
Soy beans, 3	74.8	2.9	0.9	11.5	7.2	2.3
Cow peas, 3	83.5	2.3	0.4	7.1	4.7	1.7
Other Forage Plants						
Corn fodder, 3	79.3	1.8	0.5	12.1	4.9	1.1
Sugar Cane, 2	79.4	1.3	0.5	11.6	6.1	1.1
Japanese millet, 2	75.0	2.1	0.5	13.1	7.8	1.5
Red fescue, in bloom, 5	61.0	3.5	0.5	21.0	11.1	2.1
Perennial rye grass, in bloom, 3	74.0	2.8	0.9	14.7	5.3	2.0
Kentucky blue grass, in bloom, 3	76.7	4.6	1.1	21.9	8.5	2.8
Meadow fescue, in bloom, 3	69.8	2.7	0.8	14.2	10.5	1.8
Orchard grass, in bloom, 3	77.3	2.1	0.7	12.2	5.7	1.8
Red top, in bloom, 3	61.4	4.2	1.1	21.9	8.5	2.8
Sheep's Fescue, 3	53.7	4.5	1.1	26.9	11.0	2.5
Grains and Seeds						
Beans, Soy, 4	7.7	35.4	20.3	26.1	4.6	5.7
Cow peas, 1	11.9	23.5	1.7	55.7	3.8	3.4
Barley, 1	10.9	12.4	1.8	69.8	2.7	2.4
Corn, 1	10.9	10.5	5.4	69.6	2.1	1.5
Oats, 1	11.0	11.8	5.0	59.7	9.5	3.0
Wheat 1,	10.5	11.9	2.1	71.9	1.8	1.8
Rye, 1	11.6	10.6	1.7	72.5	1.7	1.9
Buckwheat, 1	12.6	10.0	2.2	64.5	8.8	2.0
Waste Products						
Wheat bran, 1	11.9	15.4	4.0	53.9	9.0	5.8
Linseed oil meal, old process, 1	9.2	32.9	7.9	35.4	8.9	5.7
Cottonseed meal, 1	8.2	42.3	13.1	23.6	5.6	7.2

1—U. S. Department of Agriculture Farmers' Bulletin 22.

2—Feeds and Feeding—Henry.

3—U. S. Department of Agricultural Experiment Station Bulletin 11.

4—U. S. Department of Agriculture, Farmers' Bulletin 372.

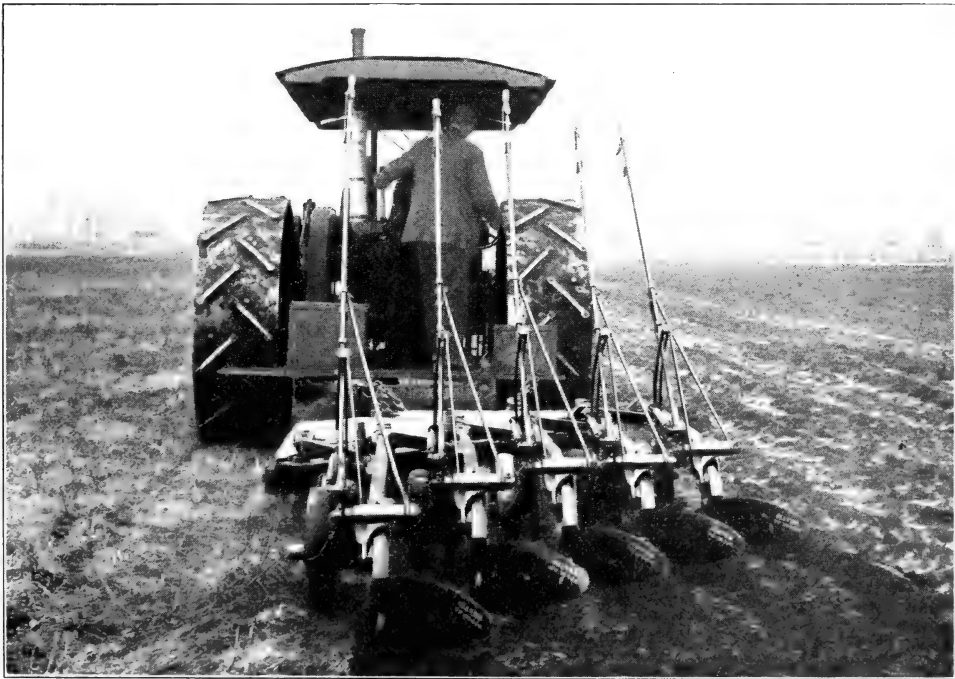
5—U. S. Department of Agriculture Statistics, given us personally not published.

{THE WING SEED CO., MECHANICSBURG, OHIO}

LIST OF LIME MANUFACTURERS AND DEALERS

- *Ohio & Western Lime Co., Huntington, Ind.
- *The M. J. Grove Lime Co., Lime Kiln, Frederick Co., Md.
- *The Security Cement & Lime Co., 800 Equitable Bldg., Baltimore, Md.
- The Glencoe Lime & Cement Co., St. Louis, Mo. Hydrate and Fertilizer Lime.
- *The F. E. Conley Stone Co., Utica, N. Y.
- *Palmer Lime & Cement Co., 11 Cliff St., New York.
- *The John D. Owens & Sons Co., Owens, Marion Co., Ohio.
- *The Kelly Island Lime & Transport Co., Cleveland, Ohio.
- *The Carbon Limestone Co., 712 Stambaugh Bldg., Youngstown, Ohio.
- The National Lime & Stone Co., Carey, Ohio. Hydrated and Agricultural Lime.
- *The Scioto Lime & Stone Co., Delaware, Ohio.
- *The Canton Lime & Fertilizer Co., Canton, Ohio.
- *The Charles Warner Co., Philadelphia, New York, Boston; Executive Offices, Wilmington, Delaware.
- *Walton Quarries, Harrisburg, Pa.
- *The Fischer Lime & Cement Co., Memphis, Tennessee.
- *The Dittlinger Lime Co., New Braunfels, Texas. Also Hydrate and Fertilizer Lime.
- *The Blair Limestone Co., Martinsburg, W. Va.
- LeRoy Lime Works & Stone Quarries, LeRoy, New York. Mfrg. Agricultural Lime.
- *The France Co., Ohio Bldg., Toledo, Ohio.
- *The Riverton Lime Co., Riverton, Va.
- *Handle Ground Limestone Rock.

OLIVER PLOWS, CULTIVATORS, LISTERS, PLANTERS *and* TRACTION PLOWS



The Oliver Engine Gang Plow as used by the Wing Seed Co.

The Oliver Line of Plows and Implements reflects the best in material, science of construction and workmanship, and the finished product continues to give deserved universal satisfaction.

Remember we have a plow for every reasonable demand of the soil varying in capacity from 6 inches to 65 feet.

OLIVER CHILLED PLOW WORKS

General Offices: South Bend, Ind.

Works at South Bend, Ind., and Hamilton, Ont., Canada.

Branch Houses at

Portland, Me.
Rochester, N. Y.
Harrisburg, Pa.
Philadelphia, Pa.
Richmond, Va.
Mansfield, Ohio.
Indianapolis, Ind.

Louisville, Ky.
Chattanooga, Tenn.
Nashville, Tenn.
Memphis, Tenn.
Cedar Rapids, Ia.
St. Louis, Mo.

Kansas City, Mo.
Dallas, Texas.
Milwaukee, Wis.
Crookston, Minn.
Billings, Mont.
Portland, Ore.
San Francisco, Cal.

THE WING SEED CO., MECHANICSBURG, OHIO



Wing's Vegetable Seeds

Are of the same high quality as the field seeds we sell. Constant urging from thousands of our customers induced us a few years ago to add this department to our business. We are now well equipped to serve your needs in garden seeds and hope that you will not fail to give them as thorough a tryout as our field seeds.

Every class of vegetables in our catalogue contains all the dependable new and standard varieties that have made good in all sections of the country under wide and varied conditions of soil and climate. At the same time we have kept in mind the peculiar requirements of our particular markets. Gardeners will therefore find sorts for all purposes and if we did not include some sorts, it is because they are either too old to be practical or too new to be thoroughly tried out.

Give Wing's Vegetable Seeds a thorough test in your 1913 garden. We can easily combine them with your field seed shipments, saving you extra expressage or freight, as the case may be. Prices on larger quantities than those given herein are gladly quoted on request.

Very truly yours,

THE WING SEED CO.



Garden Seeds

FREE PACKAGE OF IMPORTED PANSY SEED—With every \$1.00 purchase of garden or flower seeds, we give a packet of our superior pansy seed. This seed was imported for us from Holland, and is composed of the most beautiful strains of this favorite flower. Only one premium goes to a purchaser.

Prices quoted are postpaid. If one pound or more of any vegetable seeds are ordered sent by freight or express at purchaser's expense, deduct 8c per pound from price in our price list.

Beans

Dwarf or Bush Beans

1 Qt. to 100 ft. in drills. 2 Bu. per acre in drills

Culture—Succession of sowings may be made from first of May until September in latitude of New York, earlier south of this and later north. Sow in drills about 2 inches deep, and from 2 to 3 feet apart.

Wax Podded Sorts

German Black Wax—Very early, round yellow pods. Well known and favorite variety.

Pkt., 10c; Pt., 25c; Qt., 45c.

Golden Wax—Well known and popular standard kind. Pkt., 10c; Pt., 25c; Qt., 45c.

Wardwell's Kidney Wax—Extra early, free from rust, long, flat waxy pods.

Pkt., 10c; Pt., 25c; Qt., 45c

Round Pod Kidney Wax

(See Illustration)

An extra early sort. Has handsome, round, stringless and brittle pods, averaging six inches long. A vigorous grower of great productiveness. Pkt., 10c; Pt., 25c; Qt., 45c.

Green Podded Bush Beans

Bountiful

(See Illustration.)

A prolific bearer and very early sort. Has beautiful, flat, green pods; tender, very meaty and of excellent quality. Splendid market variety.

Pkt., 10c; Pt., 25c; Qt., 45c.

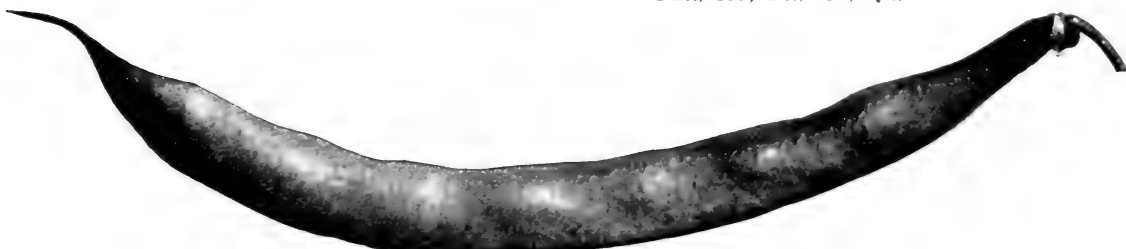
Burpee's Stringless Green Pod—Extra early, stringless, crisp, tender, and of excellent quality. Pkt., 10c; Pt., 25c; Qt., 45c.

Early Red Valentine—Very early snap variety. One of the most popular round pod beans.

Pkt., 10c; Pt., 25c; Qt., 45c.



ROUND POD KIDNEY WAX



BOUNTIFUL

THE WING SEED CO., MECHANICSBURG, OHIO

Lima Beans

Burpee's Bush Lima A very valuable variety. Beans very large, fully equal in flavor to the Large Pole Limas, bushes from 18 to 20 inches high. Plants erect, sturdy and branching, immense yielders, each bearing from 50 to 100 large, well-filled pods. **Pkt., 10c; Pt., 30c; Qt., 50c.**

Henderson's Bush Lima—Very early, and extremely productive. Beans smaller than Burpee's. **Pkt., 10c; Pt., 25c; Qt., 45c.**

Pole or Running Beans

1 Quart to 150 Hills; 10 to 12 Quarts per Acre in Drills.

Culture—The pole varieties are more tender than the bush varieties and should not be planted so early. After weather is warm and settled, set poles in rows 4 feet apart, the poles being 3 feet apart in the rows. Plant 5 or 6 beans around each stalk, thin to 4 plants.

Dreer's Golden Cluster Wax—Early and productive. Golden yellow pods 6 to 8 inches long, white seeds. **Pkt., 15c; Pt., 40c; Qt. 75c**

Kentucky Wonder—Early and productive. Absolutely stringless green pods. **Pkt., 10c; Pt., 25c; Qt., 45c.**

Lazy Wife's—An enormous yielder. Green, quite stringless pods, white seed. **Pkt., 10c; Pt., 25c; Qt., 45c.**

Red Speckled or Cut Short—A good speckled variety to plant in corn. **Pkt., 10c; Pt., 25c; Qt., 45c.**

Large White Lima—(Extra Size)—Extra large variety of the standard Limas. Beans very large. Selected stock. **Pkt., 10c; Pt., 25c; Qt., 45c.**

Beets

1 oz. to 50 Feet Drill; 5 to 6 Pounds to the Acre in Drills.

Culture—For early vegetables sow in spring as soon as the ground can be worked, in drills about 1 foot apart and 2 inches deep. For main crop sow first week in May; for winter, sow in June.

Crosby's Egyptian—Best for early market supply. As early and hardy as the original Egyptians, but of better quality, although not so well adapted for forcing in hot-beds and for transplanting. Color bright vermillion and very attractive.

Pkt., 5c; Oz., 10c; ¼ lb., 25c.

Detroit Dark Red—One of the best for market gardeners and for home use. Excellent for canning. Round, dark red skin, dark red, very sweet flesh. **Pkt., 5c; Oz., 15c; ¼ lb., 30c.**

Improved Early Blood Turnip—One of the best and most popular early kinds. Smooth and dark red; fine quality.

Pkt., 5c; Oz., 10c; ¼ lb., 25c.

Eclipse Blood Turnip—Very early, smooth, round dark red, with very small top. One of the best for the market.

Pkt., 5c; Oz., 10c; ¼ lb., 25c.

Half Long Blood—Fine, half-long, second early sort; good for winter use. **Pkt., 5c; Oz., 10c; ¼ lb., 25c.**

Mangel Wurzel and Sugar Beets

Golden Tankard—Bright yellow, large, sweet and productive. Fine for sheep and cattle. **Pkt., 5c; Oz., 10c; ¼ lb., 20c.**

Mammoth Prize Long Red—One of the best. Of enormous size and excellent quality. Produces 30 to 50 tons to the acre. **Pkt., 5c; Oz., 10c; ¼ lb., 20c.**

Sugar Giant Feeding—Said to be the best feeding variety. Roots of very high nutritive value. **Pkt., 5c; Oz., 10c; ¼ lb., 20c.**

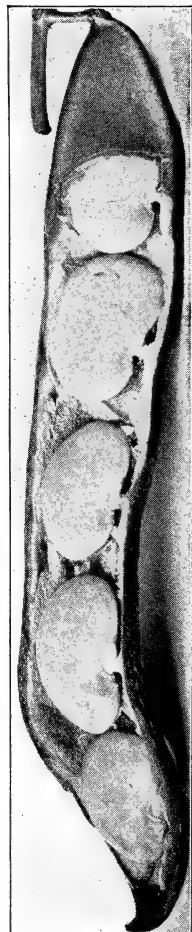
Cabbage

Culture—For early spring use sow in fall, not too early, and winter in cold frames. For late or winter crops sow in May, and set out the plants in July. They succeed best on rich, heavy loam.

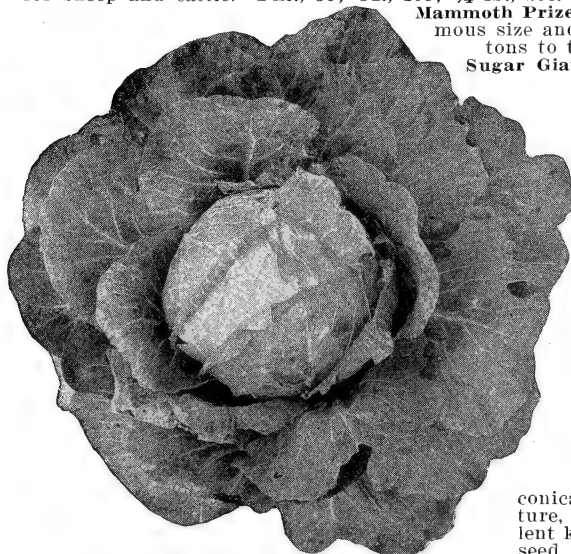
Glory of Enkhousen (See Illustration)—A very desirable early variety from Holland. Very large, solid, round heads of excellent flavor. A fine keeper. Very dwarf and compact, allowing of close planting. Quite uniform, and ideal for marketing.

Pkt., 5c; Oz., 30c.

Select Early Jersey Wakefield (See Illustration Next Page)—Very best early cabbage. Very large, conical head, compact and solid, fine texture, sweet and excellent flavor. An excellent kind to winter over in cold frames. Our seed is imported, of extra fine quality. **Pkt., 5c; Oz., 25c.**



LIMA BEAN



GLORY OF ENKHOUSEN



EARLY JERSEY WAKEFIELD

Cabbage---Continued

Large Charleston Wakefield—

About a week later than the Early Jersey Wakefield, with heads fully as solid, but much larger. Popular with market gardeners. Will not burst, and can be left standing in the field. **Pkt., 5c; Oz., 25c.**

Danish Ball Head—One of the best winter varieties. Very solid, round heads.

Pkt., 5c; Oz., 30c.

Henderson Early Summer —

Large, early sort, with very compact round heads. About ten days later than Jersey Wakefield. **Pkt., 5c; Oz., 25c.**

All Seasons—Very deep heads. Can be planted early for early or late crop. Excellent keeper. About as early as Early Summer, but with larger leaves. **Pkt., 5c; Oz., 25c.**

Henderson's Succession—One of the best. Very large, somewhat flat heads; about ten days earlier than Early Summer. Excellent kind for gardeners. **Pkt., 5c; Oz., 25c.**

Large Late Drumhead—Large headed, very fine fall and winter kind. **Pkt., 5c; Oz., 25c.**

Premium Late Flat Dutch—One of the best. An excellent popular variety, much prized for market garden and family use. **Pkt., 5c; Oz., 25c.**

Burpee's Surehead—Best late cabbage. Reliable header, with few loose leaves. Excellent keeper and shipper. Fine market variety. **Pkt., 5c; Oz., 25c.**

Winningsstadt—One of the best and most reliable for early or late use. Sure to head. Conical head, very compact habit of growth, rendering it less liable to damage from cabbage worms. **Pkt., 5c; Oz., 25c.**

Carrots 1 Ounce Will Sow 100 Feet of Drill; 3 Pounds Will Sow 1 Acre.

Culture—For gardens sow in drills about 18 inches apart. For field culture sow in drills from 3 to 3½ feet apart, so as to cultivate with horse. Soil should be good, light, well manured sandy loam, finely pulverized.

Chantenay (See Illustration.)

A stump-root sort of great uniformity. Has gained great popularity among gardeners throughout the country. Has deep orange red flesh of superior quality.

Pkt., 5c; Oz., 20c.

Danver's Half Long—One of the heaviest yielders, although the roots are shorter than some other varieties. Adapted to all classes of soils. Roots dark orange, 8 to 10 inches long, easy to harvest. First class kind, largely grown. **Pkt., 5c; Oz., 15c.**

Improved Long Orange—The most popular and largely grown kind in cultivation. Fine for stock or table use. Roots dark orange, 12 to 15 inches long. **Pkt., 5c; Oz., 15c.**

Oxheart—Short, thick roots, easy to harvest. Color, dark orange, sweet and fine in texture. Can be grown in hard stiff soil where longer kinds will not thrive.

Pkt., 5c; Oz., 15c.

White Belgian—Used for stock feeding; an enormous yielder. **Pkt., 5c; Oz., 10c.; ¼ lb., 20c; lb., 65c.**

Cauliflower 1 Ounce Will Produce 3,000 Plants

Culture—It requires a deep, rich soil, with plenty of moisture, which in very dry weather must be applied artificially. Cultivate as you would cabbage. For early fall crops, sow in May, and transplant in June, setting the plants 2 feet apart in rows 4 feet apart. Hoe frequently and feed with liberal applications of liquid manure, so that the plants will keep up a rapid, continuous growth. To facilitate bleaching, gather the leaves loosely together, and tie over the top of the head to protect from the sun. Cut before flowers begin to open. The seed may be sown as late as June 20th for late crops, in beds or hills, covering ½-inch deep.

Henderson's Early Snowball —Finest and earliest variety grown. Snow white heads of finest flavor. **Pkt., 20c; Oz., \$2.00.**



CHANTENAY CARROTS

Celery

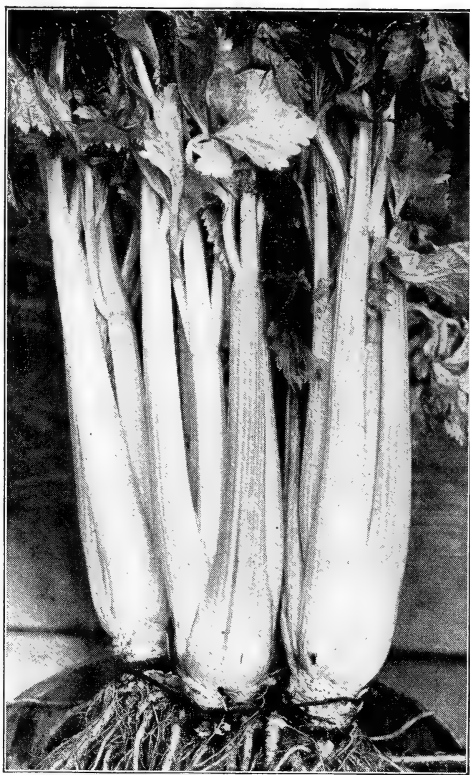
1 Ounce Will Produce 7,000 Plants.

Culture—Sow seeds in hot bed or cold frame. Transplant when the plants are 3 inches high, setting 4 to 5 inches apart. Set in the trenches when the plants are 8 inches high. Bank up a little during the summer, taking care to keep the stalks close together, so as to prevent the soil from getting between them. Finish earthing up in autumn. Never hoe or bank up in moist weather, or when the plants have dew on them. The trenches must have good drainage.

American Grown Golden Self Blanching—Best early sort. Very solid, of finest flavor, good size, very crisp, tender and free from strings. A golden yellow color when blanched. **Pkt., 10c; Oz., 35c.**

White Plume—Well known and popular variety. Very early, ornamental, finest quality. Splendid early market sort. **Pkt., 5c; Oz., 25c.**

Giant Pascal (See Illustration)—Largest variety grown. One of the best for fall and winter use. Blanches to a yellowish white, and has very fine nutty flavor. Much prized in the South. **Pkt., 5c; Oz., 25c.**



GIANT PASCAL

Corn, Sweet or Sugar

Culture—For early supply begin planting early kinds about May 1st, and for continuous supply, make plantings at intervals of two weeks until the last of July, planting early kinds first, and following with later sorts. Plant in rows three feet apart with hills three feet apart in the rows. Plant 5 kernels to the hill and thin to 3 plants. Cover about an inch for early and a little deeper for late varieties. **1 Quart to 200 Hills; 1 Peck to the Acre in Hills.**

Extra Early Varieties

Adams Extra Early—Not a sugar corn, but very early, and largely used for table corn, especially in the South. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Kendels Giant—Extremely early and very large. Quality good. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Early White Cory—One of the very best early kinds. Very large. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Peep O'Day—A new variety, very sweet, and a good yielder. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Golden Bantam—Extra early and unquestionably the sweetest corn we know. Ears average 6 to 7 inches long. It is a very hardy sort, on which account it may be planted very early. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Medium Early and Late Varieties

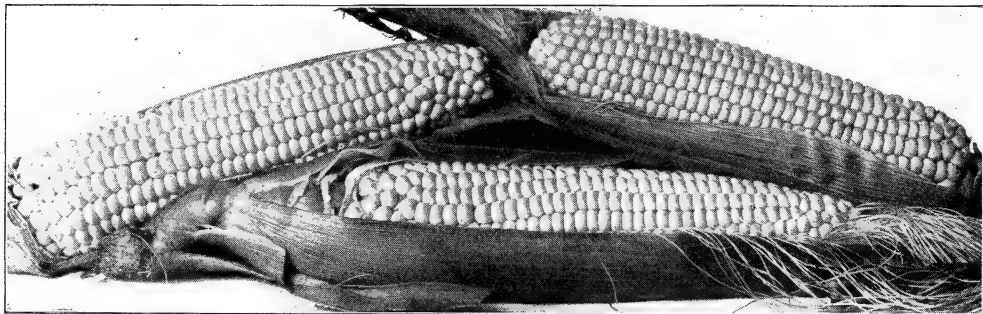
Rice's Early Evergreen—An excellent kind. Ten days earlier than Stowell's Evergreen, and its equal in quality. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Black Mexican—One of the sweetest and best. Grains are black when ripe, but when in table condition cook very light. **Pkt., 5c; Pt., 20c; Qt., 35c.**

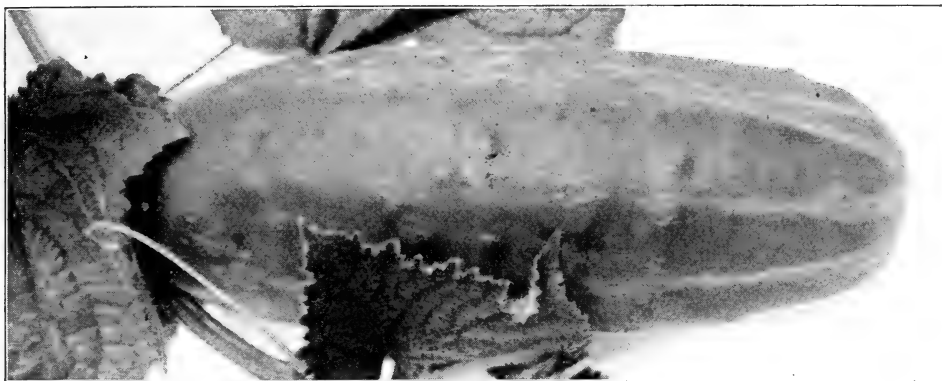
Country Gentlemen—One of the best. Small cob, densely covered with deep irregular grains. Excellent quality. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Stowell's Evergreen (See Illustration)—The standard main crop variety. Hardy and productive, tender and sweet, remaining in condition for boiling for long time. Prized by canners and market men. **Pkt., 5c; Pt., 20c; Qt., 35c.**

Corn, Pop **Queen's Golden.** **Pkt., 10c; Pt., 20c; Qt., 35c.** **White Rice.** **Pkt., 10c; Pt., 20c; Qt., 35c.**



STOWELL'S EVERGREEN



WHITE SPINE

Cucumber

Culture—For early supply sow in hot bed or greenhouse during February or March, in soil about 90 degrees. Cover half an inch and transplant to hills in the greenhouse. Move to open ground when weather permits. For main supply, plant in open about the first of June, in hills 3 feet apart each way, leaving 3 plants to a hill.

1 Ounce Will Plant 50 Hills; 1 Pound an Acre

Early Frame or Short Green—Very early, vigorous and productive. Fruit medium, good for pickling and slicing. Pkt., 5c; Oz., 15c.

Davis Perfect—New, dark green white spine. Pkt., 5c; Oz., 15c.

Improved Long Green—Fine for pickling, when small. Excellent for table use. Pkt., 5c; Oz., 15c.

Westerfield or Chicago Pickle—Favorite with market gardeners and pickle manufacturers. Very prolific. Fruit medium, dark green, fine shape. Pkt., 5c; Oz., 15c.

White Spine (See Illustration)—One of the very best pickling cucumbers. Excellent for table use, very prolific, handsome shape, finest quality. Pkt., 5c; Oz., 15c.

Egg Plant

Culture—Sow in hot bed or warm greenhouse in March or April. When plants have formed two character leaves transplant two or three inches apart or to 2-inch pots. About June 1st, or when danger from cold nights is past, transplant to open ground, setting 2½ feet apart. **1 Ounce Will Produce 1,000 Plants.**

New York Improved Purple—The leading variety. Excellent in size, quality and productiveness. Pkt., 5c; Oz., 40c.

Endive

Culture—For early supply sow in April, and for main supply in June and July.

Broad Leaved Batavian—Large heads, broad thick leaves. Used for flavoring. The inner leaves may be used for salad if blanched.

Pkt., 5c; Oz., 15c.

Green Curled Winter—The hardiest. Dark green leaves, easily blanched. Excellent for salad. Useful for garnishing. Pkt., 5c; Oz., 15c.

Gourds

1 Ounce Will Plant 25 Hills.

Culture—Do not plant until danger from frost is over. Plant 6 feet apart each way in rich soil, and leave 3 plants to a hill.

All kinds mixed, Pkt., 5c; Oz., 20c.

Kale

Culture—Sow from middle of April to last half of May in prepared beds. Transplant in June, and treat like cabbage. Very tender and delicate.

1 Ounce Will Produce 3,000 Plants.

Dwarf German Purple—Very hardy and of excellent quality. Extremely handsome. Pkt., 5c; Oz., 15c.

Dwarf Green Curled Scotch—Low, compact, spreading plants of great beauty. Bright green leaves, curled so as to resemble moss.

Pkt., 5c; Oz., 15c.



NEW YORK IMPROVED PURPLE EGG PLANT



BIG BOSTON

Lettuces

Culture—For main crop sow in spring as soon as ground can be worked in rows, covering $\frac{1}{4}$ inch deep. Thin out to 4 inches apart, and as young plants grow and begin to crowd, thin out and use. For winter use sow in hot beds from November to February. Keep a moderate heat, and allow as much light and air as possible.

1 Ounce Seed to 100 Square Feet of Drill

Big Boston (See Illustration)—Excellent for forcing or open air cultivation. Large, solid heads. Pkt., 5c; Oz., 15c.

California Cream Butter—Excellent summer variety. Good sized heads, with yellow leaves. Pkt., 5c; Oz., 15c.

Crisp as Ice—Outside leaves dark brown and green, inside yellow. Pkt., 5c; Oz., 15c.

Grand Rapids—Excellent for forcing and shipping. Pkt., 5c; Oz., 15c.

Hanson—One of the best later summer kinds. A favorite with market gardeners. Sure to form large, cabbage-like heads. Handsome outer leaves, green with light veins; inner leaves white. Pkt., 5c; Oz., 15c.

Iceberg—Good size, handsome heads, solid and of fine quality. Green slightly tinged with red. Pkt., 5c; Oz., 15c.

Philadelphia Butter—Thick, round leaves, solid round heads, standing a long time before seeding. Inner leaves yellow. A favorite with market gardeners. Pkt., 5c; Oz., 15c.

Early Prize-Head—Very thin, green and red leaves, crisp and tender. Fine for family use. Pkt., 5c; Oz., 15c.

May King

(See Illustration)

An excellent butter-head sort for early outdoor planting. Produces splendid large heads, light green outside, creamy yellow inside. Resists cold, wet weather splendidly.

Pkt., 5c; Oz., 15c.

Simpson Black Seeded—Very large, with golden yellow leaves. Superior kind.

Pkt., 5c; Oz., 15c.

Simpson Early Curled—Favorite early kind, good for forcing or open ground. Pkt., 5c; Oz., 15c.

Wonderful—Mammoth heads. Fine keeper. Solid heart, light green in color, very sweet, tender and crisp. May be cut a long time.

Pkt., 5c; Oz., 15c.

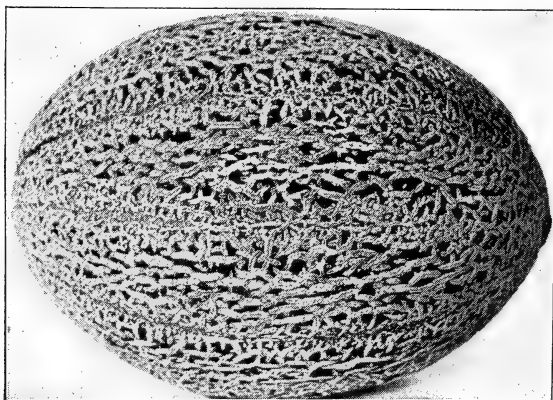
A SPLENDID NEW

Muskmelon

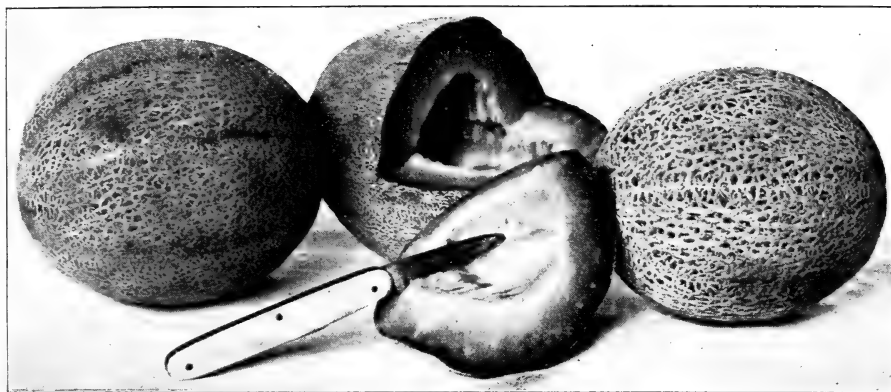
Burrell Gem

(See Illustration)

A very beautiful sort of superb quality. Average fruits are 6 inches long by about 4 inches wide, with sloping, round ends. Slightly ribbed, with fine netting. Flesh is of a rich salmon color, very sweet, ripening close to the rind. Excellent variety for shipping. Pkt., 5c; Oz., 15c.



BURRELL GEM



ROCKY FORD

Muskmelon

Culture—Plant when danger from frost is over in hills 5 to 6 feet apart, sowing about 12 seeds, and thinning to 3 or 4 plants. When 4 or 5 rough leaves have developed, pinch end off, which will strengthen the plant, causing it to branch, and will also hasten the maturing of the fruit. Should be planted in rich, well worked soil, well enriched with old manure. **1 Ounce Seed Will Plant 80 Hills.**

Banana Cantaloupe—From 2 to 2½ feet long, delicious flesh, deep salmon in color. A good seller. **Pkt., 5c; Oz., 15c.**

Burpee's Netted Gem—Very early, almost round, dark green in color, thickly netted, with light green flesh of excellent flavor. Weight from 1½ to 2 lbs. A favorite with hotels and restaurants. **Pkt., 5c; Oz., 15c.**

Emerald Gem—One of the earliest. Small, emerald green fruit, with thick salmon colored flesh. Delicious flavor. Fine for hotels and restaurants. **Pkt., 5c; Oz., 15c.**

Hackensack, Large Late—Very large fruit, round and flattened at the ends, large ribs, densely netted, flesh thick, very sweet and finely flavored. **Pkt., 5c; Oz., 15c.**

Hackensack, Extra Early Improved—Two weeks earlier than the old Hackensack, but similar in shape and appearance. Excellent quality. Fine for gardeners. **Pkt., 5c; Oz., 15c.**

Osage—Globe or egg-shaped, excellent flavor, dark green, very thick salmon colored flesh. A good yielder, and a favorite with the later markets. Fine for hotels and restaurants. **Pkt., 5c; Oz., 15c.**

Rocky Ford (See Illustration)—An improved, oblong form of the Netted Gem. Flesh green, and fine flavored. **Pkt., 5c; Oz., 15c.**

Tip Top—Round to oblong. Pale green, handsomely netted, deep salmon flesh, sweet and finely flavored. A good keeper. **Pkt., 5c; Oz., 15c.**

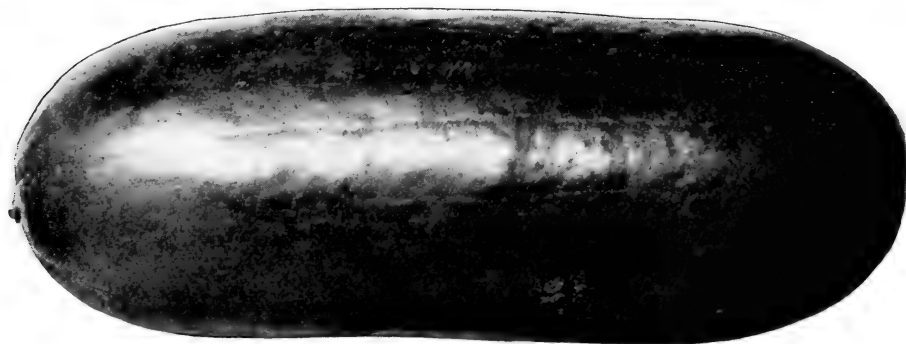
Watermelon

Culture—Plant in May, in hills 6 to 8 feet apart each way, 10 seeds to a hill, thinning to 3 plants. Soil should be light and moderately rich. Cultivate until vines cover ground, and pinch off end of plant, to induce early maturing of fruit. **1 Ounce of Seed Will Plant 50 Hills.**

Tom Watson

(See Illustration)

A very early sort of uniform shape and superb quality. Average weight 35 to 40 pounds, measuring 28 inches long. Very productive. **Pkt., 5c; Oz., 10c.**



TOM WATSON

THE WING SEED CO., MECHANICSBURG, OHIO

STRIPED, GYPSEY, GEORGIA RATTLE-
SNAKE AND KALB'S GEM



WATERMELONS—Continued

Cole's Early—Very hardy, sure cropper, medium size, nearly round. Rind green striped, flesh dark red, very delicate and sweet. **Pkt., 5c; Oz., 10c.**

Dixie—One of the best. Popular market variety. Fruit medium to large, long, with thin, tough rind, dark green striped lighter, flesh bright scarlet, sweet and deliciously flavored. Ripens earlier than most of the larger kinds, is an excellent shipper and productive. **Pkt., 5c; Oz., 10c.**

Florida Favorite—Very large melon, of excellent quality. Large, oblong fruit, dark green striped, flesh bright scarlet, very firm and sweet. **Pkt., 5c; Oz., 10c.**

Georgia Rattlesnake—A popular melon, and a favorite market kind. Oblong, large, striped, bright scarlet, very sweet flesh, nearly white seeds. **Pkt., 5c; Oz., 10c.**

Ice Cream—One of the earliest, and one of the best for the North. Nearly round, light green, mottled, excellent flavor. White seeded. **Pkt., 5c; Oz., 10c.**

Kleckley Sweet—Excellent for home use or nearby markets. Medium-sized fruit, oblong, tapering toward stem end, dark green, bright red flesh, sweet and tender. **Pkt., 5c; Oz., 10c.**

Kalb Gem—One of the best shipping varieties. Most popular kind in the South. Dark green, mottled, nearly round, fine quality. **Pkt., 5c; Oz., 10c.**

Peerless—Very early, and one of the best for the North. Rind light green, mottled, flesh firm and sweet. White seeded. **Pkt., 5c; Oz., 10c.**

Sweetheart—One of the best. Round, very large, fruit bright green mottled, flesh bright red, firm but very sweet. An excellent shipper. **Pkt., 5c; Oz., 10c.**

Onion

1 Ounce Will Plant 100 Feet
Drill; 4 to 6 Pounds Seed 1
Acre; for Sets, 50 or 60
Pounds Per Acre.

Culture—Soil, rather deep, rich loam. Prepare ground the previous fall, by manuring heavily and plowing, leaving the ground in trenches all winter. It should not be tramped on. In the spring level and firm soil. Sow seed thinly in drills about $\frac{1}{4}$ -inch deep, and 1 foot apart. Use drill with roller, or roll with light hand roller after seed is sown. Thin young plants to 3 or 4 inches apart. Cultivate freely by hoeing.

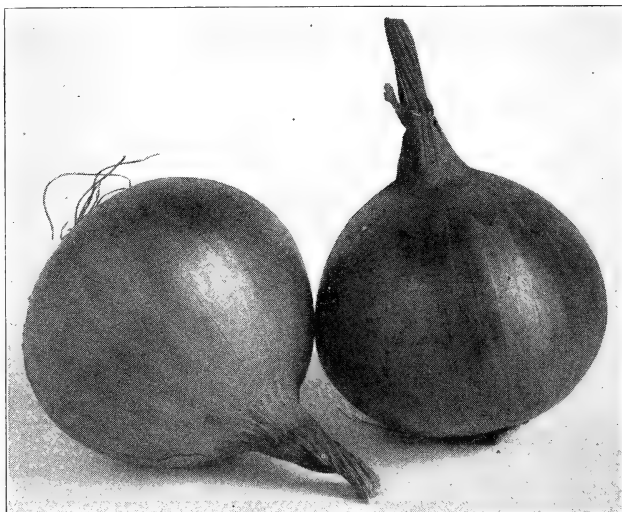
Prizetaker

This variety has gained great popularity because of its enormous size and delicate, mild flavor. Keeps well and is an excellent seller.

Pkt., 5c; Oz., 20c.

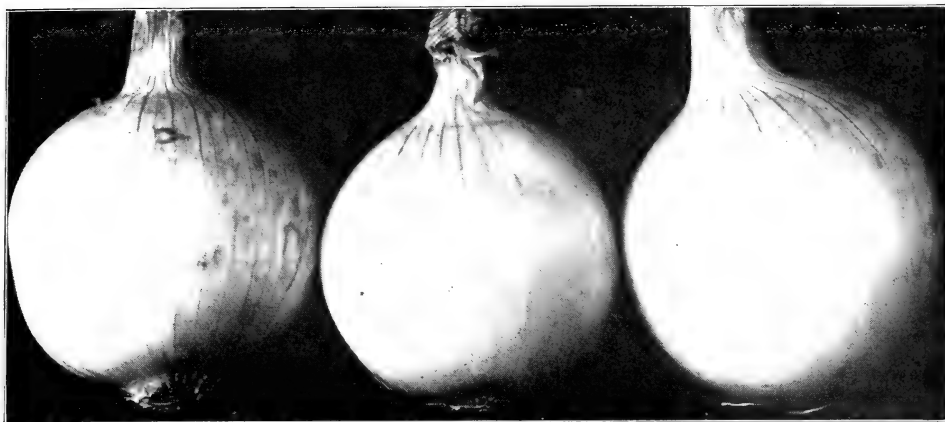
Large Red Wetherfield—The standard red kind. Our seed is much superior to that usually sold. Finest form, purplish-red skin, finer grained than most red sorts. Immense crops of this onion are grown for shipment. **Pkt., 5c; Oz., 20c.**

Southport Large Red Globe—Large, handsome, globe-shaped, purplish crimson. A good keeper, and a good seller, bringing high prices. **Pkt., 5c; Oz., 20c.**



YELLOW GLOBE DANVERS

THE WING SEED CO., MECHANICSBURG, OHIO



Southport Large Red Globe Selected—Grown from extra fine, hand selected bulbs.

Pkt., 5c; Oz., 25c.

Southport White Globe—One of the handsomest and best. Large, globe-shaped, clear white skin, mild flavor. A good keeper and seller. Always commands highest market price.

Pkt., 5c; Oz., 35c.

White Portugal or Silverskin—Medium-sized, flat, white, mild and agreeable in flavor. Hard, fine-grained, and good keeper. A favorite for bunching and pickling.

Pkt., 5c; Oz., 20c.

Yellow Globe Danvers (See Illustration)—Handsome good-sized round onion, thin yellow skin, white flesh, firm and of excellent flavor and quality. Good keeper, fine for sets or large onions. **Pkt., 5c.; Oz., 20c.**



Parsley

1 Ounce to 150 Ft. Drill.

Culture—Should be sown early in spring. Seed germinates very slowly, and is helped by soaking. Rich mellow soil. For general crop sow thickly in rows a foot apart and ½ inch deep. For winter use place in pots or boxes in the house.

Champion Moss Curled—Densely crimped and curled. Standard variety. Vigorous and desirable.

Pkt., 5c; Oz., 10c.

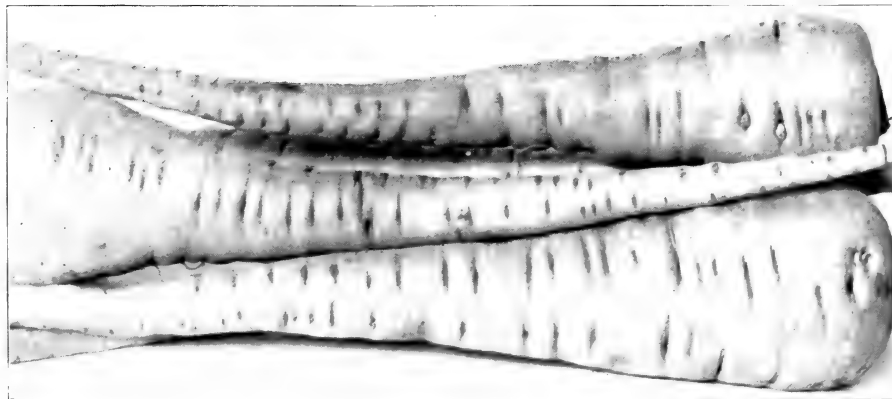
Fine Double Curled—Very fine. Beautiful dwarf variety. (See illustration.) **Pkt., 5c; Oz., 10c.**

Parsnip

1 Ounce Seed to 200 Feet Drill; 5 to 6 Pounds in Drills Per Acre.

Culture—Sow in spring as early as weather will permit in rich ground, in drills 15 inches apart, covering ½ inch. Thin to 6 inches apart, and cultivate well. Improved by being left in ground during winter.

Guernsey—Roots of greater diameter than Hollow Crown, but not quite so long. (See illustration.) An excellent flavor. **Pkt., 5c; Oz., 10c.**



Peas



1 Qt. for 75 Ft. Drill; 2 to 3 Bushels in Drills per Acre.
Culture—For early supply sow early in the spring, and make sowings every two weeks for succession. For general crop, deep rich loam or clay is best. For early varieties use leaf mold; if soil is very poor, apply manure. For general crop use a good dressing, and for dwarf kinds you cannot have the soil too rich. For market crops peas are not staked, but grow in rows 3 to 4 inches deep, according to time, soil and variety. Wrinkled varieties are not so hardy as the smooth sorts, and are liable to rot, so if planted early, they should have warm dry soil, and not be planted too deeply. They are, however, the sweetest and best. Rows for planting should be $2\frac{1}{2}$ to $3\frac{1}{2}$ feet apart.

Extra Early Peas

All marked thus (*) are wrinkled.

***American Wonder**—One of the earliest and most productive wrinkled sorts. Height, $\frac{3}{4}$ feet.

Pkt., 10c; Pt., 30c; Qt., 50c.

***Extra Early Premium Gem**—An improvement on Little Gem. Height $1\frac{1}{2}$ feet. Pkt., 10c; Pt., 30c; Qt., 50c.

***Nett's Excelsior**—Very early and productive. Finest quality. Height $1\frac{1}{4}$ feet. Pkt., 10c; Pt., 35c; Qt., 60c.

Alaska—Earliest blue pea. Popular with canners and market gardeners; very fine variety. Height, $2\frac{1}{2}$ feet.

Pkt., 10c; Pt., 30c; Qt., 50c.

First and Best—A standard variety. Very early and productive. Height, $2\frac{1}{2}$ feet.

Pkt., 10c; Pt., 30c; Qt., 50c

***Gradus or Prosperity**—Finest extra early Pea. Very large pods well filled with large peas of finest quality. Height, 3 feet. Pkt., 10c; Pt., 35c; Qt., 60c.

Second Early Peas

***Bliss Everbearing**—Fine long pods, fine flavor, good yielder. Height 2 feet. Pkt., 10c; Pt., 30c; Qt., 50c.

Dwarf Telephone—One of the best new varieties. Large, well-filled pods. Fine flavor. Height $1\frac{1}{2}$ feet.

Pkt., 10c; Pt., 30c; Qt., 50c.

Pepper

1 Ounce Will Produce 2,000 Plants.

Culture—Sow in hot beds early in April. Transplant to open ground when weather permits. May be sown in open ground when weather will allow. Soil should be warm and mellow. Rows 18 inches apart.

Chinese Giant (See Illustration)—Mammoth size, fine shape, rich, glossy red flesh, mild and fine flavored. Strong, bushy plants, very productive.

Pkt., 10c; $\frac{1}{2}$ Oz., 30c; 1 Oz., 50c.

Ruby King—Best for market and family use. Mild red, sweet pepper, very large.

Pkt., 5c; Oz., 30c.

Sweet Mountain or Mammoth—Standard. Glossy red, thick and fleshy, large and mild. Fine for market gardeners.

Pkt., 10c; Pt., 30c; Qt., 50c.

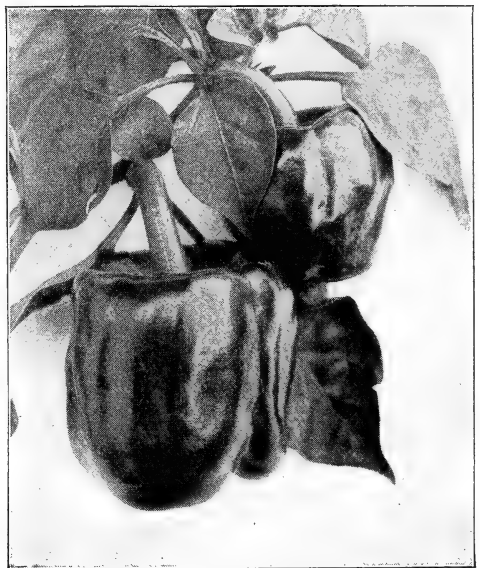
Large Bell or Bull Nose—Early, large, mild and thick-skinned. Favorite pickling variety. Pkt., 10c; Pt., 30c; Qt., 50c.

Long Red Cayenne—Bright red, very productive, very strong and pungent.

Pkt., 10c; Pt., 30c; Qt., 50c.

Red Chili—One of the most pungent. Very small bright red, cone shaped.

Pkt., 10c; Pt., 30c; Qt., 50c.



{THE WING SEED CO., MECHANICSBURG, OHIO}

Pumpkin

1 Pound Will Plant 200 to 300 Hills.

Culture—May be sown in corn, two or three seeds to every third or fourth hill. Or may be sown in hills 8 feet apart each way. 4 plants to the hill.

Connecticut Field—Largely used in the East as a field variety. Usually planted with corn.

Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.

Japanese Pie — Very fine, sweet, productive, early, delicious in flavor and fine in texture. Medium size, good keeper.

Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.



PUMPKIN FIELD SCENE

King of the Mammoths—Enormous size, sometimes weighing 250 lbs. Round, slightly ribbed, bright yellow. Grown mostly for stock, but makes excellent pies.

Pkt., 5c; Oz., 10c; ¼ Lb., 20c; 1 Lb., 50c.

Large Tours or Mammoth—Immense size, sometimes weighing 200 lbs. Oblong, used principally for stock. **Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 45c.**

Large Cheese or Kentucky Field—Large, round, flat variety, very productive and of good quality. Orange flesh. One of the best. **Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.**

Sweet or Sugar—Small, round, very productive. Orange yellow, sweet, fine-grained, and excellent for pies. **Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.**

Radish

1 Ounce to 100 Ft. Drill.

Culture—For very early supply, sow in hotbeds in February, and move to open ground when ground can be worked. Sow at intervals of ten or twelve days for succession. Sow winter varieties in August, and store in cellar before frost.

Turnip, Crimson Giant—Very large, tender and crisp, never pithy. Suitable either for forcing or open ground. **Pkt., 5c; Oz., 10c.**

Vicks Scarlet Globe

(See Illustration)

One of the finest bright red, round radishes we know. Can not be surpassed in crisp and tender quality. A leading market sort in all sections of the country. **Price, 5c; Oz., 10c.**

Turnip, Early Scarlet—Standard variety, early and quick growing. **Pkt., 5c; Oz., 10c.**

Turnip, Early Scarlet, White Tipped—Very early, round, bright scarlet, shading to white at bottom. **Pkt., 5c; Oz., 10c.**

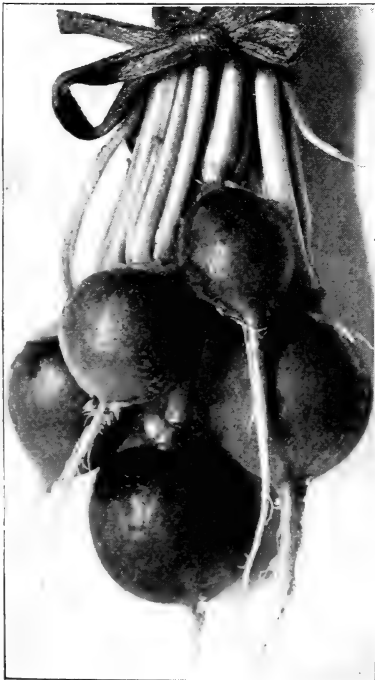
Turnip, Philadelphia White Box—One of the best for forcing; also good for outdoor culture. Round white radish, good-sized, very handsome, with short top. Crisp and tender. **Pkt., 5c; Oz., 10c.**

Long Cincinnati Market—Finest long radish for forcing. An improved strain of Long Scarlet Short Top. **Pkt., 5c; Oz., 10c.**

Long Icicle—Best white. Very early, transparent white, matures quickly. **Pkt., 5c; Oz., 10c.**

Long Scarlet Short Top—Standard scarlet variety, brittle and crisp. **Pkt., 5c; Oz., 10c.**

Long White Lady Finger—Beautiful shape, snow white, juicy, crisp and tender. Best long white radish. **Pkt., 5c; Oz., 10c.**



VICKS SCARLET GLOBE

THE WING SEED CO., MECHANICSBURG, OHIO

Fall or Winter Radishes



BLOOMSDALE SAVOY LEAVED

Salsify

1 Ounce to 50 Ft. Drill.

Culture—Sow in spring, in drills 12 inches apart and 1 inch deep, thinning to 4 or 5 inches. May be left in ground all winter.

Mammoth Sandwich Island—The best. A splendid variety, very large, uniform, delicious flavor. Pkt., 5c; Oz., 10c.

Spinach

1 Oz. to 100 Ft. Drill; 10 to 12 Lbs. to Drills Per Acre. Drills Per Acre.

Culture—Main crop is sown in September. For summer use sow at intervals of two to three weeks from April to August.

Bloomsdale, Savoy Leaved (See Illustration)—Very productive and hardy. Crinkled leaves. Fine quality. 1 Oz., 5c; $\frac{1}{4}$ Lb., 15c.

Long-Standing Thick-Leaved—Does not run to seed as soon as other kinds. Dark green. Imported seed. 1 Oz., 5c; $\frac{1}{4}$ Lb., 15c.

Victoria—A little later than the Long-Standing Thick-Leaved. Dark green. 1 Oz., 5c; $\frac{1}{4}$ Lb., 15c.

Squash

Culture—Sow in spring after ground is warm. Plant in hills 5 to 6 feet apart for bush varieties, and 6 to 8 feet apart for running varieties. Sow 7 or 8 seeds to a hill, and thin to 3 plants.

Boston Marrow—Oval form, thin skin, bright orange, with yellow flesh. Good size, excellent flavor. Keeps well. Fine for table or canning. Pkt., 5c; Oz., 10c.

Early White Bush Scalloped—Good, standard summer variety. Pkt., 5c; Oz., 10c.

Giant Summer Crookneck—Very large thickly warted, handsome squash. A good seller, bringing high prices. Pkt., 5c; Oz., 10c.

Improved Hubbard (See Illustration)—The standard winter squash. Bluish green, flesh sweet and finely flavored. Has a hard shell, and will keep all winter. Pkt., 5c; Oz., 10c.

Warted Hubbard—Large, dark green, densely warted. Splendid quality, good keeper. Pkt., 5c; Oz., 10c.



SQUASH

Long Black Spanish—One of the best. Skin black, flesh white, firm and slightly pungent.

Pkt., 5c; Oz., 10c.

Long White Spanish—Resembles Long Black Spanish excepting in color, and is not quite so pungent. Pkt., 5c; Oz., 10c.

China Rose Winter—One of the best, and a favorite with market men. Bright rose-colored skin, with white flesh.

Pkt., 5c; Oz., 10c.

White Chinese, or New Celestial—Can be used from the time it is $2\frac{1}{2}$ or 3 inches long until it is 6 inches long. Can be sown from July 1st to August 15th. Very handsome, with solid, pure white flesh of good flavor.

Pkt., 5c; Oz., 10c.

THE WING SEED CO., MECHANICSBURG, OHIO

Tomato

1 Ounce Will Produce 1,500 Plants

Culture—Sow seed in the hotbed in February, and at intervals until April. When plants are 2 inches high, transplant about 4 inches apart, and after 3 or 4 weeks transplant from hot house into cold frame. Plant in open ground about June 1st. Well enriched soil. Set 5 feet apart each way.

Beauty

A very handsome sort of extra fine quality. Purple fruits are produced in clusters of four to six. Ripens very early and remains in good condition for some time after picked.

Pkt., 5c; Oz., 25c.

Chalk's Jewel

(See Illustration)

An early variety of thrifty growth yielding heavy fruits. Flesh is thick, solid and of superb quality. Has few seeds.

Pkt., 5c; Oz., 25c.

Dwarf Champion—Early, with smooth, purplish-red fruit, plant compact and upright.

Pkt., 5c; Oz., 25c.

Dwarf Stone—Early. Nearly twice as large as Dwarf Champion, better yielder.

Pkt., 5c; Oz., 30c.

Sparks Earliana—Earliest smooth, bright red tomato. Large and very prolific.

Pkt., 5c; Oz., 35c.

Livingston's Globe—Large, firm, smooth, early tomato, rose tinged purple. Very productive and good.

Pkt., 5c; Oz., 35c.

Matchless—Large, very solid, smooth and productive. Color cardinal red.

Ponderosa—Large, sometimes weighing 4 lbs., solid, finely flavored, bright red in color.

Pkt., 5c; Oz., 40c.

Stone—One of the best. Very large, being the heaviest and most solid of the large varieties.

Round, apple-shaped fruit, very heavy, of fine quality. Pkt., 5c; Oz., 20c.

Turnip

1 Ounce Seed to 150 Ft. Drill;

2 Pounds Per Acre.

Culture—For early supply sow as soon as ground can be worked, in drills 15 inches apart, thinning to 8 inches. Sow at intervals of two weeks until the last of July, when sowing may be made for main crop.

Early Snowball (See Illustration)—Medium-sized, pure white, round, early, and of fine quality. Pkt., 5c; Oz., 10c.

Extra Early Purple-Top Milan—The earliest flat turnip. Medium size, white with purple top. Sweet and fine flavored. One of the best early. Pkt., 5c; Oz., 10c.

Red Top White Globe—Like Purple Top Strap Leaved, excepting that it is almost round. Very large and productive. Pkt., 5c; Oz., 10c.

Early White Flat Dutch—Very early, flat, white, very sweet and fine-grained. Fine in appearance. Pkt., 5c; Oz., 10c.

Long White Cow Horn—Long. Grows quickly, partly above ground. A good variety. Flesh firm, fine-grained and sweet. Very productive. Pkt., 5c; Oz., 10c.

Red, or Purple Strap Leaved
—Best known popular variety. Large, flat, white, purple above ground. Grows rapidly. Good for winter use, or late planting.
Pkt., 5c; Oz., 10c; ¼ Lb., 20c;
Lb., 65c.

Ruta Baga

1 Ounce to 150 Ft. Drill; 2 Pounds Per Acre.

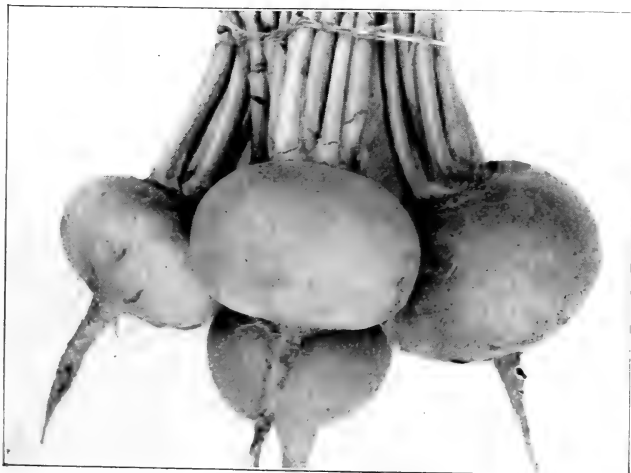
Culture—Sow from June 20th to middle of July, in drills 2 feet apart. Thin to 10 inches between plants.

Improved American Purple Top—One of the best. Large bulbs, yellow flesh with purple crown, sweet and solid. Good for stock or table use. Pkt., 5c; Oz., 10c.

White Sweet German—The very best for table use. Firm, white and sweet. Mild-flavored and fine-grained. Excellent keeper. Very large. Fine for stock.
Pkt., 5c; Oz., 10c.



CHALK'S JEWEL



EARLY SNOWBALL

Flower Seeds



NASTURTIUMS

The same high quality that puts our field and garden seeds so far above the average is also found among Wing's Flower Seeds. We buy, and as in the case of Asters and Nasturtiums, import the very choicest procurable. No better flower seeds than those offered below can be secured anywhere.

Asters

Asters Mixed—Our seed is composed of the very best varieties of this beautiful annual.

Pkt., 10c.

Nasturtiums

These are the easiest grown of all flowers. They thrive well in even poorest soil and bloom constantly from early summer until killed by heavy frost in the fall. The dwarf sorts are suitable for borders, beds, or for edging around taller growing flowers. The taller sorts are among our most popular climbers. Our mixtures contain the finest named sorts and will bear a profusion of extra large flowers throughout their season.

Dwarf Mixed—A mixture composed of the most beautiful colors. **Pkt., 5c; Oz., 10c.**

Tall Mixed—The finest colors mixed of the tall running nasturtiums.

Pkt., 5c; Oz., 10c.

Sweet Peas

These are and always will be the most popular of all fragrant flowers for cutting. Sweet Peas should be planted as early in the spring as the weather permits, since an early start will cause them to root deeply. Keep Sweet Peas picked off regularly. The more you cut them the more will they bloom.

Sweet Peas, Eckford's Hybrids

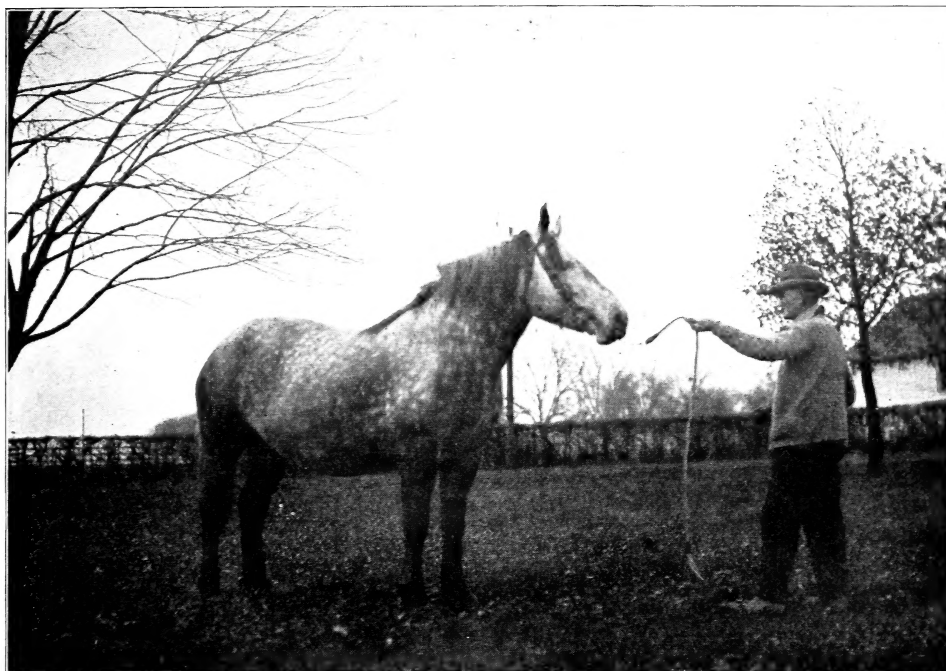
Our seed comprises the most beautiful shades of this lovely flower from the light dainty ones to the darker, richer colors. **Pkt., 5c; Oz., 10c.**

Sun Flowers Mammoth Russian

The standard variety. Very large. Fine for poultry.

Pkt., 5c; ¼ Lb., 10c; 1 Lb., 25c.





Second Prize winner at Columbus State Fair this year. Weight 1910 lbs. as a four-year-old.
One of the descendants of old "Doll."

Darby Percherons

It is a well-known fact that the first Percheron draft horse imported to the United States, old "Louis Napoleon," came to the Darby Plains in 1851. True, Canada had had an imported Percheron. The Canadian horse headed a line of that day for very good *trotters* New Jersey had some horses from France. Nothing came of them. Louis Napoleon was a 1600 lb. *draft* horse, big for that time. The same importing company that brought Louis Napoleon to the Darby Plains later brought Pleasant Valley Bill, Doll and others; all this is well known. It is not so well-known, however, or admitted by the Percheron world perhaps, that the Percherons found here a home as fit as the pastures in France. The same limestone that nourished the blue grass, the clovers and the alfalfa, maintained the size and the quality of bone for the Percherons. I saw recently three descendants of old "Doll" whose dams have come down in continuous line from that mare. They were raised on our grass and would weigh in good flesh 2000 lbs. each, and they were good enough to win first, second and third prizes at the Ohio State Fair in competition with imported animals. The preponderance of draft blood in this part of Ohio is Percheron blood, and many of the drafts enjoy as much as 15-16 of a Percheron blood. Our farmers generally take pride in owning typical big Percheron mares and in using only the good imported or native bred recorded Percherons as sires. I know of no other section of the United States where recorded or unrecorded Percherons may be found of greater excellence. The sections of the United States that want some good blood at reasonable cost can find it here. I will be glad to assist, or if necessary, furnish of our best without assistance, for a commission of 5 per cent. I am not a horse buyer and do not care to undertake any but the best typical Percherons.

WILLIS O WING,
Mechanicsburg, Ohio.

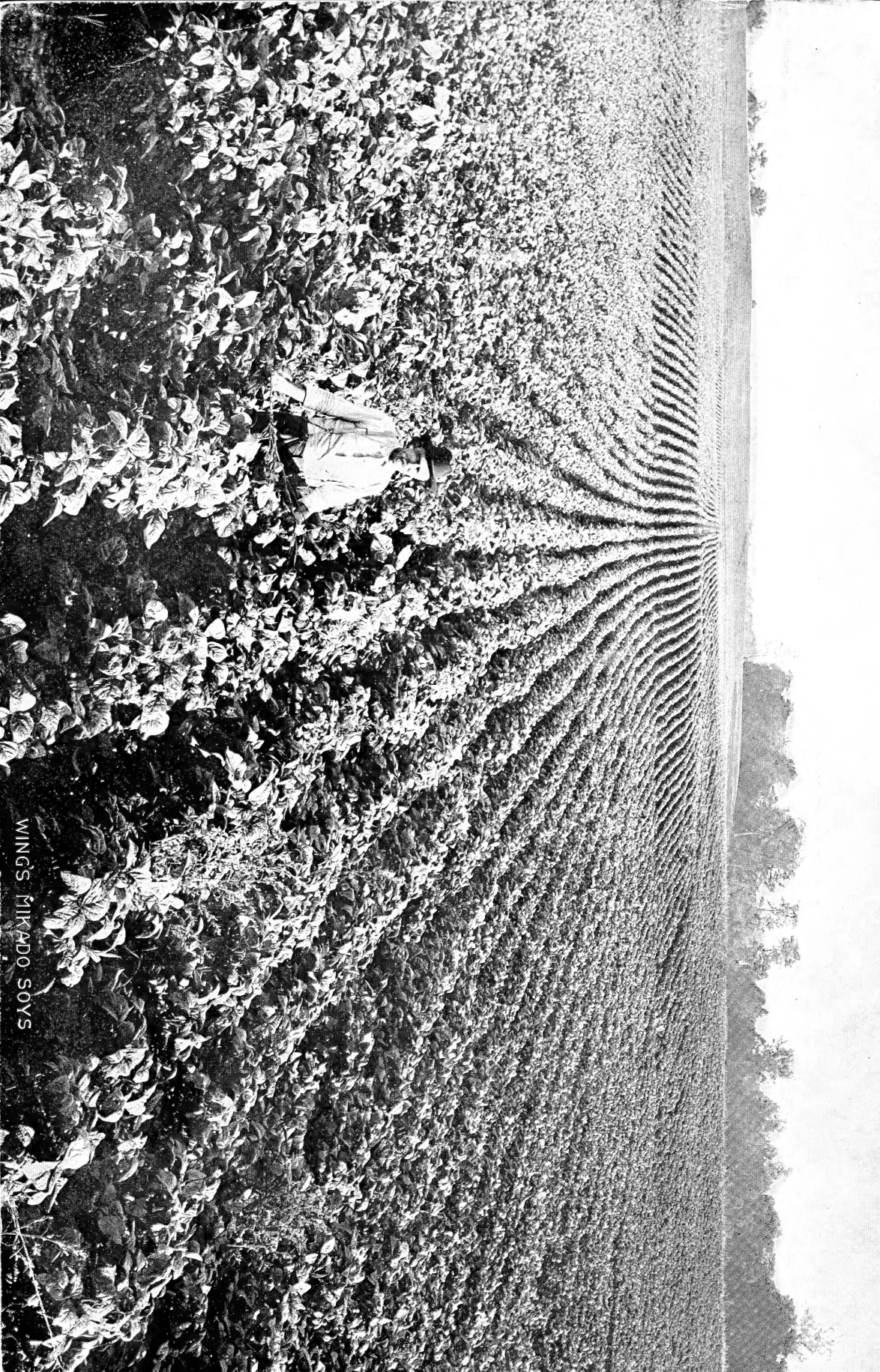
Muscovy Ducks On Woodland Farm we bred the large and beautiful Muscovy Ducks, both white and colored. This season we offer only the colored ones. Muscovies are from South America, and while they are tame enough yet they have the habits of wild ducks in caring for themselves. They are the largest of ducks and nearly as fine eating as turkeys, and are much easier raised. We can send out fine trios for \$5 or pairs for \$4, and sometimes can send eggs for 10c each. David Wing, Woodland Farm, Mechanicsburg, Ohio.

INDEX

And Table of Quantities Required Per Acre; Also Weight Per Bushel

	Page	Sow (if alone) per Acre	Wt. per Bus.
Alfalfa (<i>Medicago sativa</i>)	4..	20 lbs. ....	.60
Alsike or Hybrid Clover (<i>Trifolium hybridum</i>)	30..	8 to 12 lbs.....	.60
Awnless Brome Grass (<i>Bromus iner- mis</i>)	35..	20 to 25 lbs. ....	.14
Beans, Soy (<i>Glycine hispida</i>).....	21..	¼ to 1-3 bu. ....	.60
Buckwheat	41..	1 bu. ....	.52
Barley, Champion Beardless	41..	2 bu. ....	.48
(Sow for nurse crop 3 to 5 pks.)			
Barley, Oderbrucker Bearded	41..	1¼ to 2 bu. ....	.48
Books	37..		
Canada Blue Grass (<i>Poa compressa</i>)	36..	40 lbs. ....	.14
Corn	15..	9 lbs. ....	.56
Canada Field Peas	43..	1½ to 3 bu. ....	.60
Clovers	29..	12 lbs. ....	.60
Crimson or Scarlet Clover (<i>Trifolium incarnatum</i>)	30..	14 to 20 lbs. ....	.60
Cow Peas (<i>Vigna unguiculata</i>).....	43..	½ to 2 bu. ....	.60
English or Perennial Rye Grass (<i>Lolium perenne</i>)	36..	20 to 25 lbs. ....	.14
Fertilizers	43..		
Flower Seeds	62..		
Garden Seeds	48..		
German or Golden Millet.....	38..	50 lbs. ....	.50
Grasses, Various	35..		.14
Hungarian Millet	38..	48 lbs. ....	.48
Japanese Millet	38..	Broadcast 15 lbs. ....	.40
(In drills 10 to 12 lbs.)			
Kentucky Blue Grass (<i>Poa pratensis</i>)	35..	40 lbs. ....	.14
Meadow Mixture, Dry	34..	22 to 30 lbs.	
Meadow Mixture, Moist	34..	22 to 30 lbs.	
Meadow Fescue (<i>Festuca pratensis</i>)	36..	55 lbs. ....	.22
Millets	38..		
Orchard Grass (<i>Dactylis glomerata</i>)	35..	20 to 25 lbs. ....	.14
Oats (<i>Avena sativa</i>)	40..	2 to 3 bu. ....	.32
Pasture Mixture, Dry	34..	18 to 20 lbs.	
Pasture Mixture, Moist	34..	18 to 20 lbs.	
Peas, Canada Field	43..	1½ to 3 bu. ....	.60
Peas, Cow (<i>Vigna unguiculata</i>).....	43..	½ to 2 bu. ....	.60
Red Clover (<i>Trifolium pratense</i>).....	30..	10 to 25 lbs. ....	.60
Red Top (<i>Agrostis vulgaris</i>).....	36..	10 to 20 lbs. ....	.14
Red or Creeping Fescue (<i>Festuca rubra</i>)	36..	35 lbs. ....	.14
Rape, True Dwarf Essex (<i>Brassica Napus</i>)	40..	3 to 8 lbs.	
Rye	41..	1½ bu. ....	.56
(Sow for nurse crop 3 to 5 pks.)			
Sheep's Fescue (<i>Festuca ovina</i>).....	36..	30 lbs. ....	.12
Sweet Clover (<i>Melilotus</i>)	30..	20 to 25 lbs. ....	.60
Sugar Cane	41..	3 to 100 lbs; ordinarily 15 to 20 lbs.	
Tall Meadow Oat Grass (<i>Arrhen- atherum avenaceum</i>)	36..	40 to 50 lbs. ....	.10
Tall Meadow Fescue (<i>Festuca Ela- tior</i>)	36..	35 lbs. ....	.14
Timothy (<i>Phleum pratense</i>)	36..	10 to 15 lbs. ....	.45
Vetches, Spring (<i>Vicia sativa</i>).....	39..	50 to 75 lbs. ....	.60
Vetches, Winter (<i>Vicia Villosa</i>).....	39..	40 to 50 lbs. ....	.60
Wheat (<i>Triticum sativum</i>)	42..	2 to 2½ bu. ....	.60
White Clover (<i>Trifolium Repens</i>)....	30..	8 lbs. ....	.60





WINGS MIKADO SOYS